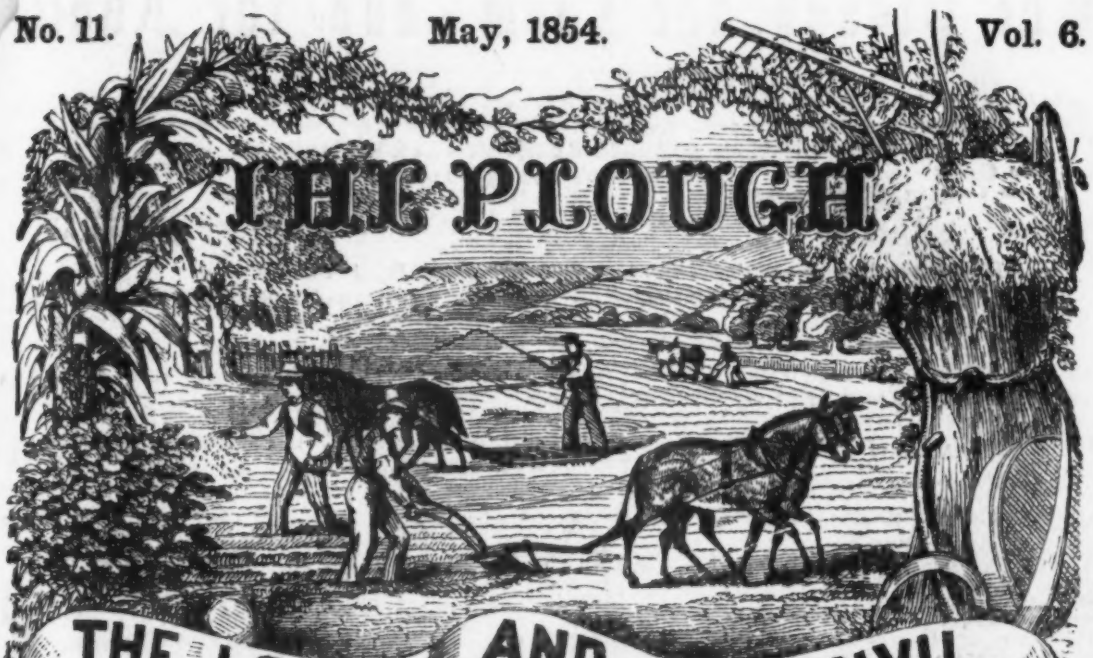
No. 11. May, 1854. Vol. 6.

THE PLOUGH



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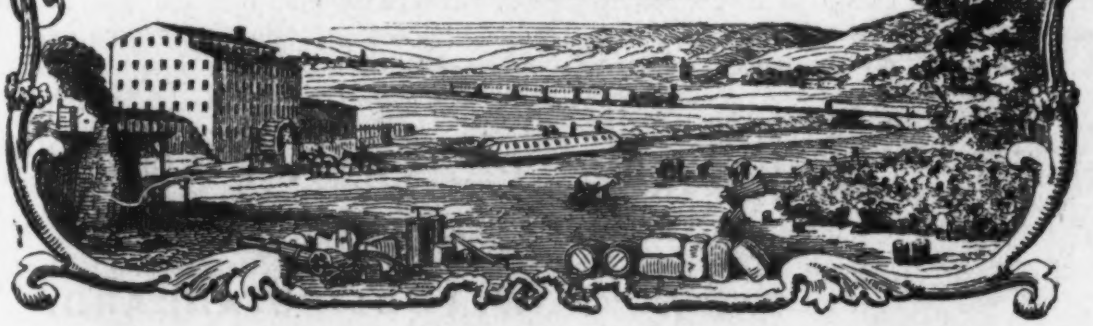
FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILDINGS—COTTAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES, CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.



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WM. WHITE SMITH, of Philadelphia, is our Agent for Pennsylvania. S. D. ALLEN is General Agent for this Journal.

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The Plough, the Loom, and the Anvil.

PART II.—VOL. VI. MAY, 1854. No. 5.

COAL-FIELDS—PENNSYLVANIA MINES.

THE extent of the coal regions of this country is very remarkable. This important mineral is absolutely inexhaustible. The quality of it, at various places, and the value, vary, of course, according to its geographical and geological position.

As we explained in the last number, there is no coal, comparatively, on the Atlantic slope, or between the Atlantic and the Appalachian chain. But here the anthracite coal-measures at once present themselves; and as soon as the summit of these mountains is passed, the Appalachian coal field, properly so called, abounding in bitumenous coal, also extends over an immense extent of country. This mountain range extends, in fact, from Vermont to Alabama, a distance of more than a thousand miles, and varying from fifty to a hundred and fifty miles in width. The structure of these ranges is very complicate, from the frequent occurrence of fractures, and deviations from right lines; but as we go westward, the strata are less disturbed, until they regain a horizontal position. On the south-easterly side of the chain, numerous dykes also are found, consisting of igneous or plutonic rocks, which essentially interrupt the regularity of the strata.

It is estimated that the extent of the coal-fields in the several States named below are as follows: Alabama, 3400 square miles of coal; Georgia, 150; Tennesee, 4300; Kentucky, 13,500; Virginia, 21,195; Maryland, 550; Ohio, 11,500; Indiana, 7700; Illinois, 44,000; Pennsylvania, 15,437; Michigan, 5000; Missouri, 6000; or a total in these twelve States of 133,132 square miles.

In Pennsylvania, nearly 10,000,000 of acres are occupied by anthracite coal, or more than one third of the whole area of the State.

The coal-beds decrease in thickness as we advance toward the West. Near Pottsville, in Pennsylvania, where the thickness of the coal-measures is the greatest, there are thirteen seams of anthracite coal, one above another, several of which are more than two yards thick. Following along this tract for several miles, it is found that seven of these seams successively unite into one, forming in the region of Mauch Chunk a mass between 40 and 50 feet thick. According to the statement of our friend, Mr. W. White Smith, of Philadelphia, in his "Off-hand Sketches," "the coal strata appear to have *over-tilted*, thus forming an almost solid area of coal of great thickness. Lying near the surface, it was for many years mined in open quarry."

The phraseology here used by our friend in the passage just cited, reminds us of a very ingenious theory, but recently broached, by which geologists undertake to account for the state of things we have been describing, namely, the union of different coal seams into one. A diagram would be very con-

venient; but even without one, we will endeavor to make ourself understood.

First, then, suppose a layer of roots of trees and other vegetable matters, resting upon a bed of coal. Above this "layer" is a growing forest. Let one extremity, or perhaps half or a third of this forest, become submerged by some great convulsion, sinking down some 20 or 30 feet. A lake is formed. The trees are in all conceivable positions, and many slowly decay. Their stumps, and the lower part of the trunks of those still standing, become enveloped in sand and mud, with which the lake is gradually filled up. In the process of time, another forest starts up from this new-formed land, and other masses of vegetable matter accumulate, each of which in its turn is to be transformed into coal; and the process of sinking and filling up, &c., is repeated again and again, as before. These various beds will evidently be united at the point at which the original formations, which remained quiet, and the sunken portions unite, and there will be as many beds of coal, one above another, and in a position like rays from a common centre, as there are repetitions of the process we have described.

It will not be expected, of course, that these changes will all commence and terminate at the same spot, and hence frequent irregularities in the number, thickness, and direction of these seams must be almost inevitable.

But to return to the extent of these veins. In the South basin, in Pennsylvania, that is, from the Sharp Mountain to the Mine Hill, there are thirteen veins, some of which are white ash and some are red—the whole thickness of the coal-veins ninety feet.

The Appalachian coal-field extends, according to the report of Professor Rogers, for a distance of 720 miles, continuously, from N.E. to S.W.; its greatest width being 180 miles, and its superficial area exceeding 63,000 square miles.

Toward the western limits of this field, the strata become more nearly horizontal, as already suggested, and the coal is more bituminous. Thus in the eastern sections, near Pottsville for example, it contains only some 10 or 12 per cent. of bitumen, while on the Monongahela and Ohio, it contains 40 per cent.

There are three well-marked divisions in the anthracite coal fields of Pennsylvania, known as the South anthracite region, the Middle, and the North or the Wyoming coal-field. The South anthracite region extends from its eastern extremity near the Lehigh, to its western terminus near the Susquehannah, a distance of about 75 miles. Its greatest breadth is about six miles. The Middle region extends from the Lehigh to the Susquehannah, about 50 miles. The Northern from the head-waters of Lackawanna Creek to Shickshinny, on the north branch of the Susquehannah, a distance of more than 60 miles.

The Southern district includes the Lehigh, Tamaqua, Tuscarora, Schuylkill Valley, Pottsville, Minersville, Swatara, and the Lykens' Valley, and Dauphin; the last two being the North and South forks of its Western extension.

The Middle includes Shamokin, Mahany, Girardsville, and Quaquake coal districts, with several contiguous basins.

The North contains the Shickshinny, Wilkesbarre, Newport, Pittston, Lackawanna, and Carbondale districts.

These sections are separated by various rocks, namely, a conglomerate of white quartz pebbles, red slate, sandstone strata, &c.

The discovery of these coal-fields has given an immense value to these

wild, precipitous mountains and to the more level tracts beyond them. Much of this land had no market value, in the proper sense of the term, before the discovery and mining of the coal, and none, or next to none, of any sort. But estimating the value of the coal buried beneath them at 25 cents per ton, the value of the land in the Schuylkill basin, for example, one of the richest in the State, will be worth twenty or thirty thousand dollars. A single vein, as we are informed by Mr. Smith, in the Mine-Hill region, "has returned an annual rental of over $62,000," to its proprietors. The *Mining Register* (Pottsville) considers an acre of coal-land worth $18,000.

But not only is the value of these lands much better appreciated now than formerly, but the increase of railroads and other facilities is essentially adding value to them every year. In fact, there is no coal-field that will not pay for the construction of a railroad of considerable length, provided its terminus is practically at or near a good market.

Before we proceed to describe other and more westerly sections, it will no doubt interest our readers to give them a rather amusing account of the discovery and early mining operations in the Lehigh district, which we find in the volume repeatedly referred to in this and a former number, the "Off-hand Sketches," published by Mr. Smith of Philadelphia, recently described among our "New Books."

DISCOVERY OF ANTHRACITE COAL.

The discovery of coal in the Lehigh district is said to have been purely accidental. There had been legends of long standing, supposed to have emanated from the Indians, that coal abounded in this section of Pennsylvania; and among some of the credulous German farmers in Lehigh, Berks, Lancaster, &c., one is occasionally reminded of them, and grave intimations thrown out that coal is reposing in "certain places" beneath the luxuriant soil of those counties. Such traditionary reports prevailed for a long time among the early settlers of the territory now comprising the several counties of the anthracite regions; and if similar ones in the counties above named should ever be realized in the same happy manner, all will unite in admiration of the German stoicism with which they are still maintained by the "older inhabitants." The story of its discovery near Mauch Chunk, in the present county of Carbon, is doubtless already familiar to many. Nevertheless, it is so curious and romantic in itself, and is fraught with such miraculous results upon the physical and mental condition of mankind, that we can not omit it here. The account was given by the late Dr. James, of Philadelphia, who, in the year 1804, in company with Anthony Morris, Esq., of the same city, visited some lands, held jointly by them, near Sharp Mountain.

"In the course of our pilgrimage, we reached the summit of Mauch Chunk mountain, the present site of anthracite coal. At the time, there were only to be seen three or four small pits, which had the appearance of the commencement of rude wells, into one of which our guide, Philip Ginter, descended with great ease, and threw up some pieces of coal for our examination. After which, whilst we lingered on the spot, contemplating the wildness of the scene, honest Philip amused us with the following narrative of the original discovery of this most valuable of minerals, now promising, from its general diffusion, so much of wealth and comfort to a great portion of the United States.

He said that when he first took up his residence in that district of country, he built himself a rough cabin in the forest, and supported his family

by the proceeds of his rifle; being literally a hunter of the backwoods. The game he shot, including bear and deer, he carried to the nearest store, and exchanged for other necessaries of life. But at this particular time, to which he then alluded, he was without a supply of food for his family; and after being out all day with his gun in quest of it, he was returning, toward evening, over the Mauch Chunk mountain, entirely unsuccessful and disappointed; a drizzling rain beginning to fall, and night rapidly approaching, he bent his course homeward, considering himself one of the most *forsaken* of human beings. As he strode slowly over the ground, his foot stumbled against something, which, by the stroke, was driven before him; observing it to be black, to distinguish which there was just light enough remaining, he took it up, and as he had often listened to the traditions of the country of the existence of coal in the vicinity, it occurred to him that this might be a portion of that *stone-coal*, of which he had heard. He accordingly carefully took it with him to the cabin, and the next day carried it to Colonel Jacob Weiss, residing at what was then known by the name of Fort Allen, (erected under the auspices of Dr. Franklin.) The Colonel, who was alive to the subject, brought the specimen with him to Philadelphia, and submitted it to the inspection of John Nicholson and Michael Hillegas, Esqrs., and also to Charles Cist, a printer, who ascertained its nature and qualities, and authorized the Colonel to pay Ginter for his discovery, upon his pointing out the precise spot where he found the coal. This was readily done by acceding to Ginter's proposal of getting, through the regular forms of the patent-office, the title for a small tract of land, which he supposed had never been taken up, comprising the mill-seat on which he afterward built the mill which afforded us the lodging of the preceding night, and which he afterward was unhappily deprived of by the claim of a prior survey."

Coal was known to exist in the vicinity of Pottsville more than seventy years ago, and searches for it had been made repeatedly; but the coal found was so different from any previously known, that it was deemed utterly valueless—more especially as no means could be devised to burn it. Searches for it were abandoned, at least for a time, when a blacksmith, by the name of Whetstone, luckily chanced upon some, and immediately undertook to use it in his shop. After experimenting with it for a short time, his efforts proved successful, and his triumph having been duly communicated, in the shape of local gossip, to the citizens of the surrounding neighborhood, attention was very soon after directed to the expediency of instituting further inquiries as to the nature and extent of the deposit, and its applicability for other purposes. Among those who at a very early period did not hesitate to declare his belief in the existence of coal in this district, was the late Judge Cooper; and it was through the influence of such persons that searches were continued through circumstances and prejudices at once discouraging, and seemingly fool-hardy. Among the first, if they were not the first, who undertook explorations for coal, were the Messrs. Potts. They made examinations at various points along the old Sunbury road, but in no instance did success attend them. The late William Morris, soon after the operations of Messrs. Potts were terminated, became proprietor of most of the lands lying at the head of the Schuylkill; and about the year 1800 he was fortunate enough to find coal, and in the same year took a considerable quantity to Philadelphia. It was in vain that he held forth its peculiar virtues, and vast future importance; all his efforts to convince the people of its adaptation to use proved abortive; and when, occasionally, an individual was found who could

be induced, through the force of argument and eloquence, to coincide in the merits of "stone-coal," the well-known lines—

"A man convinced against his *will*,
Is of the same opinion still"—

would be involuntarily forced upon his mind; and finally he had no other alternative but to dispose of his lands, and abandon his projects as altogether fruitless.

We do not know that any further notice had now been taken of this coal, for six or seven years afterward. Peter Bastons made some discoveries of its deposit, while erecting the forge in Schuylkill Valley; and a blacksmith, named David Berlin, continued to improve upon the suggestions of Whetstone, (who, by this time, had discontinued business, or perhaps left the vicinity,) and imparted his successes freely to others of his craft. But few, however, could be prevailed upon to use it. Prejudice—prejudice was ever keen, and it seemed to keep men of ordinary spirit at a respectful distance. Men of iron nerve could only oppose themselves to the current.

In the latter part of the year 1810, a practical chemist, combining science with practice, made such an analysis of the coal of this region, as convinced him that there was inherent in the mass all the properties suitable for combustion. He therefore erected a furnace in a small vacant house on Front street, between Philadelphia and Kensington, to which he applied three strong bellows. By this means he obtained such an immense *white heat* from the coal, that platina itself could have been melted! From this experiment was derived such proofs of its qualities, as ultimately favored its general introduction into that city.

But although it might easily be inferred that such experiments could not fail to have secured for it immediate favor, yet such was by no means the fact. Intelligent men, it is true, calmly deliberated over the subject, but that was all; the time had not yet come to act. Two years after this, the late Colonel George Shoemaker and Nicholas Allen discovered coal on a piece of land which they had but recently purchased—in times past called Centreville—situate about one mile from Pottsville. They raised several wagon-loads of it, but no purchaser could be found. Mr. Allen soon became disheartened, and disposed of his interest in the lands to his partner; who, having received some encouragement from certain citizens of Philadelphia, persevered in his operations. He got out a considerable quantity, and forwarded ten wagon-loads to Philadelphia, in quest of a market. Its arrival there was, as usual, greeted with the warmest *prejudice*, and there were few who appeared to evince any curiosity or interest in the subject. Nearly every one considered it a sort of *stone*, and, saving that it was a "peculiar stone"—a stone-coal—they would as soon have thought of making fire with any other kind of *stone!* Among all those who examined the coals, but few persons could be prevailed upon to purchase, and they only a small quantity, "to try it;" but alas! the trials were unsuccessful! The purchasers denounced Colonel Shoemaker as a vile impostor and an arrant cheat! Their denunciations went forth throughout the city, and Colonel Shoemaker, to escape an arrest for swindling and imposture, with which he was threatened, drove thirty miles out of his way, in *a circuitous route to avoid the officers of the law!* He returned home, heart-sick with his adventure. But, fortunately, among the few purchasers of his coal, were a firm of iron factors in Delaware county, who, having used it successfully, proclaimed the astounding fact in the newspapers of the day. The current of prejudice thereafter began to waver some-

what; and new experiments were made at iron works on the Schuylkill, with like success, the result of which was also announced by the press. From this time, anthracite began gradually to put down its enemies—and among the more intelligent people, its future value was predicted..

The first successful experiment to *generate steam* with anthracite coal, was made in 1825, at the iron works at Phœnixville. Previously, however, John Price Wetherell, of Philadelphia, made several efforts to accomplish this, at his lead works—but we have understood that he only partially succeeded.

NOTE.—The printer made us talk in the last number, of "Peruvian" system of rocks. We wrote "Permian," and of course intended it should be so printed.

THE COAL TRADE.

To such an extent has our coal industry been developed, that at the present time not less than 37,000,000 of tons are annually raised, the value of which at the pit's mouth is little less than £10,000,000; at the places of consumption, including expense of transport and other charges, probably not less than £20,000,000. The capital employed in the trade exceeds £10,000,000. About 400 iron-furnaces of Great Britain consume annually 10,00,0000 tons of coal and 7,000,000 tons of iron-stone, in order to produce 2,500,000 tons of pig-iron, of the value of upward of £8,000,000. For the supply of the metropolis alone 3,600,000 tons of coal are required for manufacturing and domestic purposes; our coasting vessels conveyed in 1850 upward of 9,360,000 tons to various ports in the United Kingdom, and 3,350,000 tons were exported to foreign countries and the British possessions. Add to this, that about 120,000 persons are constantly employed in extracting the coal from the mines, and that in some of the northern counties there are more persons at work under the ground than upon its surface, and some approximate idea may be formed of the importance of this branch of our industry. The extent of the coal areas in the British Islands is 12,000 square miles, and the annual produce 37,000,000 tons; of Belgium, 240 miles, annual produce, 5,000,000 tons; of France, 2000 miles, annual produce, 4,150,000 tons; of the United States, 113,000 miles, annual produce, 4,000,000 tons; of Prussia, 2200 miles, annual produce, 3,500,000 tons; of Spain, 4000 miles, annual produce, 550,000 tons; of British North America, 180,000 miles, annual produce not known. Taking the British Islands alone, and dividing them into districts, we find the supposed workable area as follows, in acres: Northumberland and Durham, 500,000; Cumberland, Westmoreland, and West Riding, 99,500; Lancashire, Flintshire, and North Staffordshire, 550,000; Shropshire and Worcestershire, 79,950; South Staffordshire, 65,000; Warwickshire and Leicestershire, 80,000; Somersetshire and Gloucestershire, 167,500; South Wales, 600,000; Scottish coal-fields, 1,045,000. Irish coal-fields—Ulster, 500,000; Connaught, 200,000; Leinster, 150,000; Munster, 1,000,000. Our exports, which in 1840 amounted to 1,606,000 tons, valued at £576,000, had increased in 1850 to 3,531,000 tons, of the value of £1,284,000. In 1841 our exports to France were 451,800 tons; to Holland, 173,378 tons; to Prussia, 116,296 tons; and to Russia, 77,152 tons. In 1850 they were to France, 612,545 tons; to Holland, 159953 tons; to Prussia, 186,528 tons; and to Russia, 235,188 tons.—*Durham Chronicle.*

PURE WATER.

A FULL supply of good water is not only a very great convenience for culinary and other household purposes, but is of very great importance as a matter of health. We are, therefore, glad to see movements in any quarter for an increased supply for the wants of our cities and large towns. The following statements, we believe, will be found essentially correct in reference to these matters:

CINCINNATI is supplied with water from the Ohio, raised 175 feet into a reservoir of stone, upon a hill 700 feet high, containing 5,000,000 gallons, through iron pipes 800 feet long. These works were carried on by private enterprise till 1839, at which time they were purchased by the city. Cost $1,000,000. Further improvements are contemplated.

PITTSBURGH is supplied from the Allegheny River with water raised into two reservoirs successively: the first being 160 feet, into which the water is forced through a pipe 2000 feet long, and from which it is raised by another engine into the upper reservoir, which is 390 feet above the river level, through pipes ¼ mile long. The works have cost $700,000.

ALLEGHENY CITY has water works costing $331,000. The reservoir is of earth embankment, and of 10,000,000 gallons capacity.

BUFFALO works are owned by a company. The water is drawn from the Niagara River, and passed under the Erie Canal through a tunnel 300 feet long and 6 feet square, cut in solid rock. Reservoir of earth embankment, will contain 13,000,000 gallons, on Prospect Hill, about a mile from the centre of the town. Cost $400,000.

ALBANY is supplied with water from a creek, across which, six miles from the Hudson, a forty-foot dam is thrown, forming a pond called Rensellaer Lake, containing 160,000,000 gallons of water; the water is conducted thence to the city in a brick aqueduct, four miles long. These works, and another dam lower down on the same creek, cost the city $800,000, and will deliver ten million of gallons per day.

NEW-YORK.—This city is supplied from the Croton River. The work was commenced in 1835 and completed in 1842, at an expense of $12,000,000. The Croton Dam is in Westchester county, 50 miles from the Battery in New-York. The length of the aqueduct from the dam to Harlem River is 32¾ miles. To this point the water flows through a conduit of hydraulic mason work, 7½ feet in height, and 7 feet in width. It crosses the Harlem River at High Bridge, 11 miles from the City Hall, in huge pipes, resting upon arches supported by 14 piers of heavy masonry, eight of which are 80 feet span, and six are 50 feet, the height of the bridge being 114 feet above the tide-water. The cost of the bridge was $900,000.

The water is first conducted into the Receiving Reservoir, near Yorkville, and thence, through a double line of iron pipes, three feet in diameter, to the Distributing Reservoir, by the Crystal Palace, from which it is distributed through the city. The average supply of water is 30,000,000 gallons daily, which may be doubled.

The Receiving Reservoir, bounded by 79th and 86th streets, is 1825 feet by 836, and covers 33 acres. Its capacity is 150,000,000 gallons. The Dis-

tributing Reservoir is between 40th and 42d streets, is 420 feet square, and covers an area of 4 acres. Its capacity is 23,000,000 gallons.

The FAIRMOUNT WORKS, on the Schuylkill, are the oldest and most celebrated in the country. The water is forced to a height of 96 feet, through the mains of sixteen inches diameter, varying in length from one hundred and eighty-three to four hundred and thirty-three feet. On the hill at Fairmount are four reservoirs, containing in the aggregate 22,031,976 ale gallons, and at a distance of three fourths of a mile is a fifth reservoir, containing 16,646,247 ale gallons, making the total storage of the Fairmount works equivalent to 38,678,223 ale gallons. During the year 1852 the average quantity of water pumped daily was 5,731,745 gallons, which was distributed in a district containing 26,821 houses, in which there were 29,582 rate-payers. The cost of these works to January 1st, 1853, was $3,247,894.

BOSTON is supplied from Cochituate, formerly "Long Pond," from which it is conducted by means of a brick aqueduct (except at the crossing of Charles River, where there is an inverted syphon of fifty-eight feet dip) fifteen miles in length, with a fall of four and one fourth feet to the Brookline reservoir. This reservoir covers an area of twenty-two and one-third acres, and has a capacity of 88,909,730 wine gallons. From the Brookline reservoir the water is conducted through iron pipes to three distributing reservoirs, as follows: one on Beacon hill, in Boston proper, capacity 2,678,968 gallons; the second on Telegraph hill, in South Boston, capacity 7,508,246 gallons; and the third on Eagle hill, in East Boston, capacity 5,691,816 wine gallons.

CHICAGO, for the last two years, has been engaged in constructing water works, which are now so far advanced that they will soon be brought into use. An inlet-pipe, made of pine staves, thirty inches in diameter, is extended into Lake Michigan, a distance of 600 feet, through which water is supplied to the pump well, from which it is elevated, by means of two steam-engines, (a condensing and a duplicate non-condensing,) into a reservoir at a height of 80 feet. For want of elevated ground, they are compelled to make use of a tower and tank similar to the one in use at Detroit. The tank is made of boiler iron, braced across its centre with wrought iron rods, is 60 feet in diameter, 28 feet deep, and contains about 493,000 gallons. Other reservoirs, of like capacity, will be constructed as required. The works are calculated to furnish a daily supply of 3,000,000 gallons, and have cost about $400,000. The unprecedented growth of that city will probably require the immediate extension and enlargement of the works.

The following analyses of the water of three cities are given by Professor Silliman, Jr.:

PHILADELPHIA.

Chloride of sodium,	.1470
" magnesia,	.0094
Sulphate of magnesia,	.0570
Carbonate of lime,	1.8720
" magnesia,	.3510
Silica,	.0800
Carbonate of soda, and loss on analysis,	1.6436
Total solid matter,	4.2600
Carbonic acid in one gallon,	3.879

NEW-YORK.

Chloride of sodium and trace of potassium,	.167
Sulphate of soda,	.153
Chloride of calcium,	.372
" aluminum,	.166
Phosphate of alumina,	.832
Carbonate of lime,	2.131
" magnesia,	.662
Sulphate of lime,	.235
Silica colored by manganese,	.077
Carbonate of soda and loss,	1.865
Total solid,	6.660
Carbonic acid in one gallon,	17.817

BOSTON.

Chloride of sodium,	.0323
" potassium,	.0380
" calcium,	.0308
" magnesium,	.0764
Sulphate of magnesia,	.1020
Alumina,	.0800
Carbonate of lime,	.2380
" magnesia,	.0630
Silica,	.0300
Carbonate of soda, and loss,	.5295
Total solid,	1.2200
Carbonic acid gas in one gallon,	10.719

MANAGEMENT OF THE LOCUST TREE.

THE editor of the *Ohio Farmer* gives the following very useful article on this valuable tree.

The Locust, *Robinia pusedo-acacia*, is a native of the United States.

Method of Cultivation.—"It is capable of being raised from the seed, cuttings, layings, and suckers; but the seed method is said to afford the best plants. The seeds should be sown about the end of March, or beginning of the following month, on a bed of light mould, being covered to the depth of about half an inch. The plants usually appear in the course of six or eight weeks. They should be well weeded and watered, and, when sufficiently strong, should be set out in the spring, or autumn, in nursery rows, for two or three years, in order to remain to have a proper growth for final planting."—*Rees' Cyclopedia.*

Dr. Drown, of Rhode Island, says that "The easiest method of raising the locust is as follows: Plant fifteen or twenty trees on an acre, and, when fifteen or twenty feet high, run straggling furrows through the ground, and, wherever the roots are cut with the plough, new trees will start up, and will soon stock the ground with a plentiful growth."

Use.—It is observed in the *North American Sylva*, a celebrated work, by F. Andrew Michaux, that "The greatest consumption of locust-wood is for posts, which are employed in preference for the inclosing of court-yards, gardens, and farms, in the district where the tree abounds, and the circumjacent country. Tney are transported for the same use to Lancaster, Baltimore, Washington, Alexandria, and the vicinity. When the trees are felled in the winter, while the circulation of sap is suspended, and these posts are allowed to become perfectly dry before they are set, they are estimated to last forty years. Experience has shown that their duration varies according to certain differences in the trees from which they are formed; thus about Lancaster, and at Harrisburg, a small town on the Susquehannah, where a considerable trade is carried on in wood that is brought down the river, those trees are reputed the best whose heart is red; the next in esteem are those with a greenish-yellow heart; and the least valuable are those with a white heart. From this variety in the color of the wood, which probably arises from a difference of soil, are derived the names of *red*, *green*, and *white* locust. In the Western States there is a variety which is sometimes called the *black* locust."

It is probable that the locust with a "greenish-yellow heart," spoken of by M. Michaux, is the same with that which Mr. Briggs calls the *yellow* locust; and although M. Michaux supposes "this variety in the color of the wood probably arises from a difference of soil," it is not impossible that there may be permanent specific differences in the several varieties. If so, the discovery is of importance.

M. Michaux says, "In naval architecture, the shipwrights use as much locust-wood as they can procure. It is as durable as the live oak and the red cedar, with the advantage of being stronger than the one, and lighter than the other."

With regard to the insect which destroys the locust, M. Michaux says, "Within eighteen or twenty years, an obstacle has unhappily appeared, which will contribute greatly to prevent the multiplication of the locust in all the anciently-settled parts of the United States; this is a winged insect, which attacks the tree while standing, penetrates through the bark in the centre of the trunk, and, for the space of a foot, mines it in every direction, so that it iseasily broken by the wind. This inconvenience is already so serious as to induce many people to forego all attempts to form plantations of locust. In Virginia, I have not learned that trees of the natural growth have been visited by this destroyer, but those that have been reared about the plantations have already felt its ravages. This evil, which is hard to remedy, will be more sensibly felt when the destruction of the forests now on foot—an inevitable consequence of the neglect of all measures of preservation—shall force the inhabitants to have recourse to plantations which they will wish to form, in a certain proportion of the locust. Hence it may result that, disappearing from the American forests, by constant consumption, and not being reproduced on account of the insect, the locusts will become extremely rare in their native country, and abundant in Europe, where no similar catastrophe forbids their propagation."

The *Massachusetts Society for the Promotion of Agriculture* have offered a premium of fifty dollars "for a mode of extirpating the worm that attacks the locust tree, which shall appear to the satisfaction of the trustees to be effectual."

The following, copied from a report of a committee of the *Essex Agricultural Society*, on farms in Essex county, Mass., places the advantages to be

anticipated from the culture of the locust in a fair, and, we believe, just point of view:

"A practical illustration of the advantages of cultivating the locust tree, presented itself on the farm of Dr. Nichols. Several acres, that were, a few years since, barren and gravelly pastures, are now covered with a good coat of grass, almost entirely by reason of planting and permitting a growth of locust trees upon the land. This is easily done, after a few trees have taken root, either from the seed, or by being transplanted, and taking care that horned cattle do not go upon the land while the trees are young. In addition to the increase of feed, the trees themselves are well worthy of cultivation. No growth is more rapid, and none more in demand, or of greater value when arrived at maturity. It may be doubted whether an acre of land can be made to yield more in the course of twenty-five or thirty years, without the application of any manure, than by planting it with locust trees. On a fair computation, the number of serviceable posts that might be obtained in this time would be from three to six hundred, worth from fifty cents to one dollar each. The increase of feed and surplus wood would fully pay the labor of cultivation; so that the proceeds of the timber would be the profits of the land.

An objection to the cultivation of the locust tree is often brought, from the fact that they are sometimes destroyed by worms. This is true; but the ravages of this insect are found to be greater where the trees are few and scattered. In the grove on this farm, which extends over a number of acres, and in the groves in the vicinity, but very few of the trees are at all injured by the worms. This objection is by no means sufficient to authorize the neglect of their cultivation. It certainly is of the highest importance to the farmers of Essex, to inquire how they can improve their pastures; or rather, how they can save them from ruin; for it must be obvious to all, that, as at present managed, they are constantly growing worse, and many of them have already become of very little value. If, by planting them with trees, by ploughing, by applying plaster, as has been done with good success on the farm of Mr. Bartlett, or in any other way, they can be reclaimed, it surely is worthy of the experiment."

SONG-BIRDS—BREEDING OF FISH.

The following was brought out in one of the discussions of the American Institute, at a late meeting of the Farmers' Club:

Song-Birds.—Mr. Hooper, a distinguished naturalist of this city, read a paper upon the introduction of the song-birds of Europe into this country. He stated that in 1852, a committee of gentlemen undertook to introduce these birds into Greenwood Cemetery. Mr. Woodcock, of Brooklyn, then in England, introduced fifty goldfinches, fifty English larks, fifty robin redbreasts, and some others, which have been let loose in the groves of the cemetery. These are now probably well established upon Long Island.

Breeding of Fish.—Dr. Adams communicated the success of those engaged in the business, as it has now become a business, of breeding fish. Fish eggs can be transported between folds of wet linen in a box, and 500,000 eggs can be hatched in a stream under a sieve fifteen inches in diameter. Another paper treated of the mackerel fishing of the Black Sea and Bosphorus.

The fishing season commences at Constantinople February 12. The fish are then five or six inches long. By the time they reach Gibraltar, the mackerel are about half grown. In September, the same fish arrive on the American coast, and are then full grown. Hundreds of thousands of people are engaged in the fishing in the spring of the year in the Bosphorus. The water seems alive with these fish as they come down from the Black Sea.

Mr. Pell said upon the subject of fish, that he would give the Club some information. He was convinced by his own experiments that all salt-water fish can be bred in fresh water, and that fish are easily domesticated. He feeds his fish upon liver, Indian meal mixed with blood, and boiled rice. He says his pike are very voracious: he has seen one strike into a school of small fish he was feeding, and take a full mouthful in an instant. He said a perch or golden carp can be frozen in ice solid and thawed out without injury. He spoke of the great value of fish as a manure, containing all the elements necessary for the farmer to fertilize his crops. He said that he had succeeded in producing Swedish leeches in his fish ponds. By cutting off the tail of the leech, the blood will pass off, and the leech do double the duty.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

METEOROLOGY, CROPS, FRUIT CULTURE, &c., IN VIRGINIA.

Messrs. Editors: The opening of the spring month, March, was beautiful. Its balmy air induced the belief that we were to have an early and very favorable spring. The gardeners were every where at work, seeds for early vegetables were planted, oats sown, wheat-fields looked green and gay, with a bright promise to the husbandman, meadows and clover-fields wore the spring livery; up to St. Patrick's Day the weather was delightful. Since the 17th March we have had blighting winds to the 29th, when the mercury stood at sunrise at 22°, and the ground in many places too hard froze to plough till 9 A. M. The range of the mercury from the first to the 30th March, at sunrise, stood as follows: 33°, 44°, 59°, 46°, 40°, 33°, 44°, 55°, 58°, 63°, 42°, 33°, 40°, 53°, 52°, 58°, 40°, 40°, 28°, 36°, 32°, 28°, 41°, 38°, 30°, 26°, 36°, 34°, 22°, 36°, rising at noon as high as 75° in the early part of the month. It is now snowing, which I hope will take the frost out of the air, and give us more genial weather. The mercury has not rose above 50° for the past ten days at noon, for about which period we have had fine weather for ploughing and getting ready to plant corn, which, with early farmers on sandy lands, is usually put in by the 15th April in the Valley. Our clay lands, are not usually planted till 1st to 10th May, and good new lands are sometimes planted as late as 1st June, and fair crops realized.

It is too soon to say any thing with regard to the wheat crop; many fields look very well, the ground being completely matted, and promise well. Thin, sandy, badly-farmed lands, as is usual, look badly. The crop of old wheat has nearly all been ground out, and gone to market; the last crop with us was short, and the bulk of it went into market early, and at short prices. The oat crop was also short, and is worth at home 35 to 40 cents. Corn crop good, and commands 50 to 55 cents. Much of our corn is fed to fat cattle, which now command $8 to $10 per hundred in the Richmond market. We yet have a few distilleries in my neighborhood, on a small

scale; four are left in a district which in 1827 numbered above forty. They are a bane to any country—a curse to any community. Public opinion has done much to suppress them, and good men of every name and party have labored long and earnestly to banish the evil from our beloved country, and I pray they may not cease in their efforts until alcohol, in all its phases, may be placed under the care of the apothecary, and only dealt out as a medicine. Where is the family in all our broad land that can not point to some one near and dear to them who has brought sorrow and sadness to their hearts from a too free indulgence in intoxicating liquors? Degradation, disgrace, crime, and death follow the inebriate, and woes are denounced against him who putteth the cup to his neighbor's lips. May the day not be far distant, when enlightened public opinion every where will banish the evil from the length and breadth of our widely-extended republic.

There is beginning to be much attention paid to fruit culture in this part of Virginia, and many of our farmers are getting select varieties. Too little attention, however, is paid to the trees after being set out; many believe it is only necessary to stick a tree in the ground, and after a while they will have good fruit. In order to insure success, the ground should first be snugly secured by a good fence, then carefully cultivated and regularly manured. If the trees are carefully spaded under for two or three yards round, and in dry seasons three or four inches of half-rotted straw put round them to keep the roots moist, they will grow as much in one year as they will in two or three, if neglected and left to take care of themselves. While the trees are young, they should be carefully pruned every spring, cutting off only small branches, so as to form a well balanced head, and that no main branches will be crossed, thereby rubbing each other. Where land is rich, the trees should be planted forty feet apart; if the soil is thin, thirty to thirty-five will answer. My trees, set out nineteen years since, at thirty-three feet each way, are now nearly touching each other where the land is good, and in a few years more the ground will be too much shaded for cultivation. On the hill-side there is yet ample space, the fruit appearing equally good, but the trees not so well grown. I have cultivated and manured my orchards regularly, and for ten or twelve years have kept my hogs in them from August to October. The fruit, with a small feed of corn, cut up and fed, stalk and all, fattens them very finely, and it requires only a few weeks' feeding to make very superior pork.

The article in your March number, from Mr. Bacon of Elmwood, on peach culture, meets my views exactly. I have no doubt the woollen cloth wrapped around the root of the peach tree, will keep the tree safe from the depredations of the borer. Fruit trees will become acclimated. I have now a fig tree that stands the winter tolerably well, which for many years was killed to the ground; for the last two years it has borne full crops of figs. I also find that some of your fine winter apples in the northern States are fall apples with us, when they first come into bearing, but in time become good winter fruit here. Yours, &c. H. B. Jones.

Near Brownsburg, Rockbridge Co., Va., March 30, 1854.

American Forest-Trees.—In North America we have fifty species of the oak, while all Europe has only thirty species. North America has forty species of pines and firs, the United States over twenty, while Europe has but fourteen species.

THE HOP AND ITS CULTURE.

The Committee of the N. H. Agricultural Society, upon root and grass crops, report as follows as to the article of hops:

They award the first premium of $5 to Gen. William P. Riddle, of Manchester. To William Riley of Hooksett, the 2d premium, a diploma.

The average price of hops per pound, for 48 years, is 12 4-5 cents.

The whole amount of hops grown in the United States for the year 1849, as computed in the census returns of 1850, is 3,467,514 pounds.

New-England raised	707,856 lbs.
New-York "	2,536,299 lbs.
	3,244,155 lbs.
Balance for other States, ...	223,359 lbs.

From the above table, it will also be seen that the price of hops during 48 years never has gone below five cents per pound, the actual cost of growing a pound of hops. Of what other agricultural product can the same be said, that is grown in New-England? Then, this very year, and at the time of writing this report, hops readily bring 45 cents per pound, giving the enormous profit of $450 per acre!

The hop, *lupulus humulus*, in botany, is a genus of plants, neither the male nor female flower of which has any corolla; the cup of the male flower is composed of five leaves; that of the female is made up of only a single leaf, very large, and of an oval figure; the seed is single, roundish, covered with a coat, and contained within the cup.

Mortimer reckons four kinds of hops: 1st, the wild garlic-hop. 2d, the long and square hop. 3d, the long white. And 4th, the oval hop. The first of these is not worth cultivating. The second is a good hop, but looking generally red toward the stalk, it will not fetch so good a price at the market. The long white hop is the most beautiful of all, and produces the greatest quantity; this kind and the oval will grow very well together. They delight in a deep, rich garden mould.

The hop sends its roots four or five yards deep, and for this reason it thrives best in that land where there is a good bottom below what is usually stirred, or manured, for agriculture. If the hop-land be wet, it must be laid up in high ridges, and drained, that the roots be not rotted or chilled.

New land is found to succeed better with hops than old.

The following is General Riddle's method of cultivating, curing, and drying:

SETTING THE ROOTS.

The spring of the year is the proper season for setting the roots. Prepare the ground by ploughing and manuring in the same manner as for a grass crop. Plant the hops in hills seven feet apart each way, putting three pieces of the root, each about four inches long, in a hill.

The roots will not vine the first year, consequently a crop of corn may be taken from the same ground, by planting in intermediate rows. In the fall succeeding, put a shovel-full of manure upon each hill of the hop-yard, as protection of the roots against the frost.

SETTING THE POLES.

Nothing further is necessary for their welfare till May, the proper time for setting the poles.

Hemlock is the best material for poles—18 feet long, shaved on four sides in order that they may season well, thereby lasting the longer. Set two poles to a hill, about nine inches apart, and in ranges, leaning a little to the south, so that the branches of the vine may swing free. When the vines have grown to the right length, select two of the most thrifty, and tie them with woollen yarn to each pole. This is very important. And attention also should be given to keep the main vines always upon the pole.

Cultivate the yard well, so as to keep it free from grass and weeds, and prevent the branch vines from growing about the hill.

The hop generally blossoms about the 2d of July, and is matured fit for picking by the 5th of September. When the burr beginning to open at the base, acquires a yellowish tinge, and the lupulin or flower has covered the tip of its stem, the hop is ripe and ready for harvest.

PICKING THE HOPS.

The method of securing the hop crop when ripe is quite simple.

The vines are cut at the hill, and the poles, pulled from the ground, are laid across a box into which the hops are picked. This box is usually about six feet long, three feet wide, and three feet high. Four or more can work at the same box. Females are generally the most expert in picking. A man or boy is necessary to tend the box and handle the poles. One person can pick from 25 to 30 pounds of dry hops per day. They should be gathered as free from stems and leaves as possible.

CURING THEM, AND THE KIND OF KILN.

After picking, the green poles are brought to the kiln to be dried, which is the most important part of the hop-growing process. It requires no inconsiderable degree of skill to be successful in this department, as knowledge of the mechanism and nature of a kiln is also necessary.

The most approved kiln is constructed after the following plan:

A brick foundation-wall is built seven or eight feet high, and ten by eleven feet in dimension. It is well to have this wall plastered internally. In the centre of the front wall at the base, there is placed a large stone or brick furnace, suitable to receive fuel from without, and furnished with a funnel passing around within the foundation, above three feet from the top, and terminating in a chimney provided for the purpose. At the base also of this front wall, and on each side of the stove or furnace, there are two small openings, one foot by three feet in diameter, to let in cold air at the bottom of the kiln. The top of this foundation is laid with lathing one inch wide, the strips being one inch apart, and covered with a thin flaxen cloth. Boards about ten inches wide, are placed lengthwise around this cloth, leaving a narrow walk around the kiln. The superstructure is placed upon the foundation-wall, as convenience may require, with a roof for shedding the rain. The walls are about eight feet high, and provided with slide or blind openings, suitable to admit the air for driving off the dampness which arises in the process of drying the hop. Such a kiln is capable of curing 150 pounds of hops in twelve hours, if properly regulated.

The green hops are placed in the kiln-box and spread upon the cloth about eight inches deep.

DRYING AND BAGGING.

A constant heat must be kept up until the dampness of the hops has passed off. Attention also should be paid to the regulation of the windows above spoken of.

To ascertain when the process of curing is over, take a medium-sized hop and snap it; if the leaves fall off, and the stem breaks short off, it is sufficiently dry. The hops may then be removed to a room as free from light as possible, but provided with windows to admit a free circulation of air. A room adjoining the kiln is most convenient, where they should lie ten or twelve days before bagging. Hops are pressed into bales five feet long, eighteen inches thick, containing about 200 pounds—much in the same manner in which cotton is packed. The cider-press is commonly used for this purpose.

EXPENSE OF GROWING HOPS.

It requires 1 1-4 acres of land to grow 1000 pounds. Good soil produces one to one and a half pounds to the hill, if properly cultivated.

The cost of hemlock poles prepared for setting is two and a half cents a-piece.

It requires six feet of hard wood to cure 1000 pounds of hops.

The cost of a kiln, after the above plan, is $50, or thereabout.

The whole cost of cultivating a field of hops, including picking, curing, and pressing, is about five cents per pound.

THE CRANBERRY.

It has frequently been asked, What is the most successful method of *cultivating* the cranberry? This may perhaps be a somewhat difficult question to answer, as it has been grown "successfully" in a great variety of ways, and on almost every description of soil, intervening between dry and dusty sands, and those composed of viscid and tenacious clay. It is indigenous to low, boggy lands, and consequently to such its cultivation has, till recently, been almost exclusively confined. When grown on such lands, the plants are generally "set" in the fall. The bog-land requires no preparation, except a covering of sand about two inches deep. The vines are removed from their original position, with a small quantity of soil attached to their roots, and transplanted two or three feet apart. They develop foliage rapidly, and require hoeing only during the first two years after being set out. When circumstances admit of it, it is a good plan to keep the water on them from December till about the first or second week in April, and after that to keep it, if possible, level with the ground's surface, so as to retain a supply of moisture about the roots, during the first part of the season. Early frost, or frost in the autumn, before the fruit begins to ripen, proves fatal to the crop. Cranberries are obtained from vines thus managed, the second or third year, and the plants, when once established, never run out.

A writer in the *Massachusetts Plowman* gives an experiment in trans-

planting cranberries from low, swampy land, into good corn-land, "in hills far enough apart to admit the cultivator, and clean hoeing." The work of transplanting was performed early in the spring; at midsummer they blossomed, and in the fall produced fine fruit. The berries were large, very handsome, and many of the hills produced a pint of fruit."

In 1846, the *Cultivator* contained an interesting article on cranberry culture, in which it was asserted that Mr. Sullivan Bates, of Bellingham, Mass., had raised this fruit in great abundance, "by transplanting the vines from low ground to high." The system this gentleman pursues is, it seems, to plant them in lines, or drills, twenty inches apart, (whether vines or seeds, it is not stated,) and seven inches in the drill. His plan is always successful. He has from a single acre in one season, cranberries to the amount of *four hundred bushels!* It is essential, however, to the success of this plant, that the soil be such as will not parch or bake, and should be replete with energetic humus in a state of slow but uniform decomposition and decay.

It is also asserted in the Farmer's Dictionary, that the cranberry is a plant easily and successfully cultivated on uplands, and that the powers of prolification, and the general health and physiological character of the production, appear to be ameliorated and greatly improved by changing its medium, and also that the product is more desirable, being of a fairer development, and superior flavor. "The runners," says this authority, "can be 'layered,' or seed sown in the spring. They grow rapidly, covering nearly every thing, and are but little subject to the attacks of insects. The plants are set about eight inches apart, and are kept clean at first. The yield increases for several years, and becomes as great as four hundred bushels per acre, in five years, although two hundred is a good average. The fruit is gathered with rakes, which serve to prune the plants at the same time. When the berries are intended for keeping, they should be rolled over a gently inclined plane of wood, in order to remove such as are soft or rotten. They keep well for a year in tight casks, filled with water, and headed close."

It is stated in the *American Agriculturist*, that Mr. William Hall, of Norway, Maine, "sowed the berries on the snow, in spring, on a boggy piece of land, about three rods square. The seed took well, rooted out the weeds, and produced accordingly." It is greatly to be hoped that the cultivation of this plant, now ascertained by so little trouble and expense, will become more common.—*Germantown Telegraph.*

ALSYKE CLOVER.

We copy the following from the *London Gardener's Chronicle*, and ask the attention of our readers to it. The seeds of this clover have been distributed by the Patent Office for a year or two, but we have not heard of any one giving it a fair trial.

The following is from a printed circular: "Alsyke," or Perennial Hybrid Clover Seed, is indigenous in Sweden, where it has been cultivated in the native pastures of that country for the last hundred years, and has in some cases been known to grow to the height of five feet, although in England it attains only that of two feet. The root is fibrous, and the heads globular.

The plant bears a greater resemblance to the white than to the red clover; and although its stems are recumbent, they do not root into the soil like those of the white clover; in short, it may be described as a "giant" white clover, with flesh-colored flowers. The plant yields two mowings annually. Linnæus observed the Alsyke clover growing on poor, bare, obdurate clays in the Morea, where no other plant could be made to vegetate; and yet, under such unfavorable circumstances, this clover flourished with an uncommon degree of luxuriance, and yielded shoots as tender and succulent, although not so abundant, as if reared in the most richly-manured fields. Micheli mentions the plant as growing in open situations on a clayey soil, and as being, in his opinion, worthy of cultivation. Sturm says it is found in Holland, and that he tried its cultivation along with that of a great number of other clovers, placed under the same circumstances, and that the result convinced him that there is no other kind of clover equal to it for the purpose of feeding cattle. The red clover will last only two years in perfection, and often, if the soil be cold and moist, nearly half of the plants will rot, and in the second year bald places will be found in every part of the field; beside that, in September and October many crops left for seed are lost in consequence of the heavy rains during that period; while the Alsyke clover, on the contrary, ripening its seed much sooner, and continuing in vigor much longer, much risk and expense are avoided, and a large profit accordingly accrues. Further, when this plant is once established, it will remain for a great many years in full vigor, and produce annually a great quantity of herbage of excellent quality. The best method of disposing of the Alsyke clover crop is either by mowing it for hay, cutting it occasionally as green food, or feeding it down with sheep, in which latter case it may be turned on sooner than any other clover; and if eaten down quite bare, and the stock taken off the first week in June, the next crop will come sooner to the scythe than any other species of clover so treated; and if saved for seed, the seed will be ripe sooner than any other, and the plant will again afford a good bite for the sheep until the land be required to plough for wheat—a heavier crop of which is invariably produced after Alsyke than any other clover. If mown for hay, it should be cut as soon as most of the heads are in full bloom, and before they begin to turn brown and die away. Observe the foliage in the lower parts of the plants—when the leaves turn yellow, decay, and drop off, the crop should be cut; for by standing longer, the plant will lose more at the bottom than it gains at the top. The weight of the seed required to be sown is, according to circumstances, from ten to fifteen pounds per acre, an extent of crop which will produce many tons annually of green herbage, independent of a crop of seed. The hardy nature of the plant is proved by the fact of its thriving by transplantation; it will admit of being taken up at the expiration of two or three years and planted in any other situation; the plant when taken up is merely divided, and its fibrous roots cut a little with a pruning-knife; so that the farmer need never be at a loss for a crop of clover. The Alsyke does not suffer from the severest frosts; it will flourish on the most barren land, where few grasses will grow at all, producing a heavy crop of seed, and affording an abundance of nutritious herbage for horses, oxen, and sheep; and when land has become clover-sick, and can not be depended on for a crop of the ordinary sorts of clover, this has never been known to fail.—*Farmer's Companion and Horticultural Gazette.*

SOUTHERN FRUIT.

No luxury, within our knowledge, can be had at so low a cost, considering its value, as good fruit. Good fruit can be raised in all climates except that of the polar regions; for where one kind fails, another is found readily to adapt itself. But we would now refer especially to our Southern States. A change of climate modifies essentially, in many cases, the character of a given kind of fruit. Some are improved by going South, some are deteriorated, and it is the business of the efficient horticulturist to ascertain, by actual experiment, what good fruits remain good, and what poor fruits are greatly improved by being transplanted from the Northern to the Southern States. Not a few experiments have been made, and we should be glad to avail ourselves of an early opportunity to set them forth in an accessible form. But other experiments are yet to be made, and these we shall not fail duly to chronicle.

We are specially moved to these remarks by reading a valuable "Address on Fruit," by Robert Nelson, of Macon, Ga., which we find in *The Soil of the South*, and gladly make the following extracts:

"Many splendid fruits have sprung up in the South, and are lost again for want of the proper way of propagation; but from the great impulse at present given to this matter, I venture to predict, that in a few years the South will have its own collection of fruits, independent of Northern varieties, adapted to its climate, in many parts peculiar to itself, and inferior to none.

And why should we not have them? Did not the Romans, in an equally warm climate, cultivate twenty-two varieties of apples, thirty-six of pears, and eight kinds of cherries? Are not the plums and peaches natives of Persia, and thence introduced to Italy?

It was at the Agricultural Fair at Macon, Ga., in October, 1852, that a few gentlemen collected and exhibited for the first time our native Southern apples; and those that examined and tasted the beautiful specimens exhibited by J. Van Buren, Esq., John Murray, Esq., and Z. Jones, Esq., all of Georgia, will admit that they were of superior quality. Who will doubt the possibility of raising Southern winter-apples, when it is a fact that an excellent apple for culinary purposes, which will keep until April, is already grown in Thomas county, Ga., close to Florida? I am confident that the South will soon produce apples enough, not only to supply the home market, but even to export, and our early Southern apples will become a very acceptable article in the Northern cities.

In spite of all carelessness, peaches will grow every where in the South though often of very inferior quality for want of proper attention. For some time the opinion has prevailed, that many fine varieties of peaches from Northern and Middle States would not bear well here. This is quite contradictory to my experience, as I for several years have raised heavy crops of such varieties, and therefore I can not see any reason for rejecting them, particularly as we have but few, if any, early Southern seedlings, that can replace them. But as to *late* peaches, where can they be obtained? Not from the North, for the latest peach in the Philadelphia market, the "Heath Cling," which there ripens during the month of October, is here gone by the first of September, and still we have a pretty warm fall left, during which we would very much relish a fine peach. For such late varieties we must rely entirely upon Southern seedlings, several of which have already been raised, and are now in pro-

pagation. The "Baldwin" peach, raised by Dr. Baldwin, of Montgomery, Ala., and ripening about the first of November, is a very superior fruit, and the finest late free-stone peach yet known. When we once get all these late Southern seedlings, (and I have now a good many of them under propagation,) we will have fine peaches, ripening in succession for five months, namely, from the beginning of June to the beginning or middle of November, and this more than hitherto has been met with in any country.

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For a long time it was the common opinion, that pears could not be grown successfully in the South. The splendid specimens, however, shown by Dr. T. Camak, of Athens, Ga., and Rev. Henry Deane, of Griffin, Ga., have sufficiently proved what skill and cultivation will do. It must always be borne in mind, that the pear requires a rich and deep soil, and when worked upon quince stock, which brings it into bearing early, it also ought to be rather moist. It is further not to be forgotten, that top-dressing, well intermixed with charcoal, ashes, and rusty iron, and well worked in, near the tree, has a very beneficial influence upon pears. The number of varieties is almost endless, a great many of them having been raised from seed by the celebrated Prof. Van Mons, in Belgium. Here we again see the influence of our hot climate; for those varieties that in France and in the North are late winter fruit, can here hardly be kept longer than October. The pear, therefore, disseminated by J. V. Jones, Esq., of Atlanta, Ga., which in all its lusciousness will keep till April, must be considered a great horticultural acquisition; perhaps it may even be a native Southern seedling, as well as the pear recently distributed by J. L. Moultrie, Esq., of Chunnenuggee, Ala., and which was found in an old Indian yard, may be one of the very few native Southern pears in existence. Such facts certainly ought to encourage the planting of all seeds of superior fruits, and much good may result from it.

There is no difficulty in raising plum, apricot, and nectarine trees, and the trouble in raising the fruit is to be attributed to the plum-weevil, against which insect, however, frequent syringing of the trees with lime-water, and afterward dusting it over with air-slacked lime, when the fruit is as big as a pea, has lately been highly recommended. I also know a man in my vicinity, who is always raising fine crops of nectarines and apricots. His remedy is to build a lightwood fire, and let the smoke draw through the trees for several times during the dangerous period. It is but fair here to mention that S. Rose, Esq., of Macon, Ga., has succeeded in raising from the seed a magnificent, large, and pure white nectarine, which I think a great acquisition.

Though the Romans cultivated eight varieties of cherries, though this splendid and luscious fruit is grown in abundance as well as in great perfection in the South of Spain and Italy, amongst grapes and oranges, still it is almost a failure in Georgia and Alabama, south of latitude 34°. Several trials have been made, and more will be made, and probably some successful means of raising them will yet be discovered. Perhaps the surest method for cherries also, would be to raise new Southern varieties from seed.

It is indeed surprising to see the immense quantity of dried figs, annually imported from the Mediterranean to America, when this fruit can be raised in the Southern States in such an abundance as to make the crop profitable even as food for pigs and poultry; and still no body thinks of drying them for market, which would, unquestionably, be as profitable a business as the operation is an easy one. The ripe figs are only placed on hurdles or trelliswork, and exposed to the heat of a spent oven for about twenty-five minutes, in order to kill the vegetable life, after which they are dried fully in the sun,

and packed in drums. As there yet are but few Southern nurseries, and figs are not valued in the North, on account of their being too tender for out-of-doors cultivation, it is rather difficult to get a good collection of this fruit. I have been fortunate enough to procure the celebrated genuine "Smyrna" fig, as well as the luscious Portuguese fig, "Lambe Deidos," (Lick the fingers.)

In a climate so warm and pleasant as that of Alabama and Georgia, any body would suppose that grapes would grow to the highest perfection. This is, however, not the case. But few of the European grapes can be grown with any thing like success, and even the American varieties, the Catawba and Isabella, will not come up to what they are in Ohio. It appears to me that their blasting is caused by the sudden changes from heat to cold, and then to heat again, from which the European grapes are so much more liable to suffer, as they bloom pretty early, and have a tender skin; for I have often found that, whenever a grape-vine has been allowed to run on the ground amongst weeds and grass, where the temperature is more uniform, the fruit is quite perfect, while that on the trellisses, and exposed to the sun, will blast. I am therefore inclined to think that they might do better, when the vines are trained on the shady side of a rather close trellis. Amongst the foreign grapes I have as yet succeeded best with the "Golden Chasselas," "Blue Frontignac," "Muscat of Alexandria," and "Warrenton," which, though often considered a native American grape, undoubtedly is a European variety. But amongst all the varieties of grape-vines, the "White Scuppernong," a native Southern seedling, stands alone, as a peculiar grape, and unquestionably takes a high rank. It is a never-failing bearer, of most luxuriant growth, and, though in flavor very different from all other grapes, of superior quality. It can not be too highly recommended for the South. Though it almost invariably is deteriorating, when raised from seed, still it might be worth a trial, I think, to raise hybrid seedlings between this and the European varieties. It may perhaps not be generally known, that few plants are more benefited by having a mixture of rotten leaves, ashes, and soap-suds worked in by the roots, than the grape-vine.

The successful cultivation of strawberries, as described by Charles A. Peabody, Esq., of Columbus, Ga., is above all praise, and I can not give it any higher recommendation than by calling attention to his method, as my pen would be insufficient for the task.

Beside speaking of hardy fruits, I must finally draw attention to the orange family. It is true, oranges and lemons can not be grown successfully unprotected in the open air, with any certainty, north of latitude 31°. With a slight protection, however, they can be raised a couple of degrees farther north. For this purpose, I would recommend to arrange the slope of a hill in terraces, about six feet high, on which oranges and lemons could be trained, on trellisses, as wall-trees. A slight covering in hard frosts would protect them, as they are not so much injured by the frost itself as by the sudden thawing up, and thus they could be grown profitably even for market.

But in order to be successful in growing all these fine and wholesome fruits, we must bestow some care and attention on our fruit-ground, for surely it will not do to "plant a tree as you would plant a gate-post." When a thing is worth doing at all, it is worth doing well, and as it is worse than useless to spend labor and expense on planting fine fruit-trees, without some expectation of raising fine fruit, let us at once go to work and *prepare* the ground.

If deep working of the soil is valuable in a cold climate, how much more

so must it be in a warm one? Work your soil *deep*, put your manure *deep*, give all your plants a chance to strike their roots a couple of feet down, where they always will find it cool and moist, and you will see how finely they will grow, and how well they will withstand a drought. Five years ago I took the very top of a dry, piney-woods sand-hill: it was a worn-out and abandoned plantation. I manured it, and worked it two feet deep, where nothing but yellow sand was to be found, and where, before that time, not more than one bushel of corn could be raised to the acre. Now you can on the same spot see a complete nursery, where fruit-trees, shrubbery, roses, and even hard-headed cabbages, are growing in the greatest luxuriance; and this, I think, will sufficiently prove the advantage of working the soil deep. Therefore, throw aside the hoe, which will only scratch the soil; get a good spade, spread good stable manure over the ground, (even fresh from the stall will answer, when worked in during fall or winter,) and trench the soil two feet deep. Don't be afraid of putting the manure too deep; I know it is a common error, that manure will sink too deep. I say *error*, for ammonium, the essential element of manure, is a gas, which will always rise and evaporate. Very important, however, is it to mix the manure thoroughly with the soil, as it otherwise may become too dry in the summer. When your soil is thus prepared, there will be nothing like failure. If this method should be too troublesome or expensive, the soil may only be ploughed deep, and sub-soiled, by running the turn-plough twice in the same furrow, and every time as deep as pos-ible, previous to running the sub-soil plough. Then make holes at proper distances, but not less than three feet wide by two feet deep. Throw up the surface to one side, the sub soil to the other, and place eight or ten shovels full of manure on the third side. In filling the holes, it is most convenient to go at it with three hands, one to each pile of soil and manure, and throw it in promiscuously. Plant the tree a little higher above the general surface than it was before, allowing about three inches for settling with the soil; water the tree, and tie it to a pole."

The lecture suggests that our progress would be still more accelerated by a regard to the following particulars:

"1. If our agricultural associations should appoint a *standing* committee, for the purpose of describing and classifying all new fruits, as well as such older varieties which are deserving of general cultivation.

2. If a small fund could be raised, and a suitable person appointed to travel over the country at different times during the fruit season, to pick up and describe all fine new varieties now scattered over the South, and procure twigs for propagation in the proper season.

3. If these scions were placed in the hands of such gentlemen as would take care of them and propagate them, that they should not be lost again."

We append to this the remarks of a traveller, in the same paper, on the same general topic. He says:

"Few of our up-country readers can realize the capacity of the soil and climate around New-Orleans for horticulture. We saw in a garden on the lake, oleanders in the open grounds, with trunks larger round than our body, massive floral trees! The pecan-nut tree flourishes in great luxuriance. We saw groves of them near Carrollton, which resembled the massive oak groves of Georgia. The pecan-nut meets a ready sale, and may be profitably cultivated through all the Southern States. They grow freely from seeds, producing fruit in four to six years. We were astonished to find the top or tree onion so common in New-Orleans; they are sold by the prominent seedsmen at about one half the price they bring in the North.

The celery of New-Orleans is not first-rate; that of Mobile is very superior. Mobile has many advantages over New-Orleans, horticulturally. Not the least interesting portion of the horticulturist's travels, is the magnificent steamers which float upon the waters. Here he sees the vegetables and fruits, and all the horticultural luxuries, and can form some proper conception of the importance of his profession, not only to the denizens of the crowded city, but to the travelling public. There is untold wealth yet in the undeveloped horticulture of the South."

COMPARATIVE VALUE OF CROPS AS FOOD FOR MILCH COWS.

The following extracts from the report of the Essex County (Mass.) Agricultural Society, are worthy the attention of our readers:

In the spring of 1850, I sowed forty-two square rods of land to carrots, on which corn was raised for fodder the year previous, ploughing in two cords of well-rotted manure. There were sixteen young apple-trees growing on the land, which had been set out three years; the soil a black, strong loam; the yield was one hundred and fifty-six bushels.

January 1st, 1851, I purchased twelve new milch cows and commenced selling my milk. After the first two weeks, my son observed that he did not have milk enough for his customers by about three gallons per day, and that I had better buy more cows; but, believing as I did at that time, I could easily increase the milk of my present number one quart each per day, by feeding with carrots, I accordingly ordered the man who tended the stock to commence the next morning (January 15th) to give two and one half bushels of carrots to the twelve cows, morning and night, for the next seven days. I then inquired of my son how much the cows had increased, and to my surprise, his answer was not quite two gallons for the week. I then resolve to attend to the feeding myself, and fed the next seven days with hay only. The result was no diminution. I then fed with carrots as before, the next seven days, and there was less than one gallon increase. I continued the same feed alternately for the next four weeks ending March 12th; during which time the cows fell off some in their milk, but not more than one gallon when fed on hay only, than when carrots were added. The hay used during the trial was first quality English hay, with a small foddering of salt hay in the morning. I continued feeding the same kind of hay night and morning, giving at noon as much rowen hay as they would eat in thirty to forty minutes, which increased the milk more than one quart to each cow daily for the next four weeks. By this time I was fully satisfied it would not pay to raise carrots for milch cows, and that I would try some other method.

In April, 1851, I prepared and sowed the same piece of land with onions, where carrots grew the year previous, using the same quantity of manure. The yield was one hundred and sixty-eight bushels, which I sold for forty-seven cents per bushel, amounting to seventy-eight dollars and ninety-six cents. In November following, I bought four tons of shorts in Boston, at nineteen dollars per ton—freight to Bradford one dollar and forty-five cents per ton, making eighty-one dollars and eighty cents, or two dollars and eighty-six cents more than the onions brought. I then had four tons, or about four hundred bushels of shorts, costing but two dollars and eighty-six

cents more than the one hundred and fifty-six bushels of carrots. I think the labor was no more to raise the onions than the carrots, and the labor less to feed the cows with shorts than with carrots.

December 1st, 1851, I commenced giving my cows from four to eight quarts of shorts each per day, and continued through the winter, except eight days in February I left off feeding four cows with shorts that had been having eighteen quarts per day, and measured the milk the first four days. I found they decreased on an average three pints each per day. The next four days I fed them with about an equal quantity of rowen and coarse hay, which increased the milk full up to the quantity when fed with shorts.

The next experiment I commenced December 25, 1852, by selecting three of my best cows as nearly equal in size, conditions, and goodness as I could.

No. 1, eight years old, dropped her calf Nov. 25.
No. 2, nine " " " " " "
No. 3, eight " " " " " "

I continued the experiment eight weeks, giving to each cow the same money's worth of the different kinds of feed by weight as the same cost at the time, namely, shorts, twenty-six dollars per ton; oil meal, thirty dollars per ton; Indian meal, eighty cents per bushel of fifty lbs.; rye meal, one dollar per bushel of fifty lbs.; giving to each cow fifty-two and a half cents worth per week, seven and one half cents per day.

The first week forty-two lbs. of shorts were weighed for each cow, and fed night and morning, being about four and one half quarts each time, wet with six quarts of water two hours before feeding. (Beer measure is used for the milk.)

No. 1 gave in seven days	82½	qts.
No. 2 " " "	78½	"
No. 3 " " "	79	"
Total	239¾	qts.

Second week, thirty-five lbs. oil meal were weighed for each cow, wet and fed same as the shorts, being about four quarts per day.

No. 1 gave in seven days	87½	qts.
No. 2 " " "	81¾	"
No. 3 " " "	82½	"
Total	251½	qts.

Third week, thirty-two lbs. thirteen ozs. of Indian meal were weighed for each cow, wet and fed the same, being about three quarts per day.

No. 1 gave in seven days	85	qts.
No. 2 " " "	84½	"
No. 3 " " "	84	"
Total	253½	qts.

Fourth week, twenty-six and one quarter lbs. of rye meal were weighed to each cow, being about two and one half quarts per day, wet and fed same as above.

No. 1 gave in seven days	81¾	qts.
No. 2 " " "	83½	"
No. 3 " " "	78½	"
Total	243¾	qts.

Fifth week, thirty-five lbs. of shorts, weighed and fed as before.

No. 1 gave in seven days	76¼	qts.
No. 2 " " "	78½	"
No. 3 " " "	74	"
Total	228¾	qts.

Sixth week, forty-two lbs. of oil meal, weighed and fed as before.

No. 1 gave in seven days	82	qts.
No. 2 " " "	84½	"
No. 3 " " "	81¼	"
Total	247¾	qts.

Seventh week, thirty-two lbs. thirteen ozs. of Indian meal, weighed and fed as before.

No. 1 gave in seven days	86¾	qts.
No. 2 " " "	89½	"
No. 3 " " "	84	"
Total	260¼	qts.

Eighth week, twenty-six and one quarter lbs. of rye meal, weighed and fed as before.

No. 1 gave in seven days	78½	qts.
No. 2 " " "	83	"
No. 3 " " "	78¾	"
Total	240¼	qts.

Three hundred and fifty pounds of English hay, and seventy pounds of salt hay, were weighed and fed to the cows each week. When the cows were fed on shorts and rye meal, the whole quantity was consumed. When fed on oil and Indian meal, an average of fifty-eight pounds of English hay per week was not consumed.

Cost of feeding three cows two weeks on shorts	$3	15
750 lbs. English hay, 75 cts. per hundred	5	62
140 " Salt hay, 50 " "		70
Total	$9	47

Quantity of milk for the two weeks, 468½ qts.

Cost of feeding three cows two weeks on oil meal	$3	15
692 lbs. English hay, 75 cts. per hundred	5	18
140 " Salt hay, 50 " "		70
Total	$9	03

Quantity of milk for the two weeks, 499 qts.

Cost of feeding three cows two weeks on Indian meal	$3	15
692 lbs. English hay, 75 cts. per hundred	5	18
146 " Salt hay, 50 " "		70
Total	$9	03

Quantity of milk for the two weeks, 513½ qts.

Cost of feeding three cows two weeks on rye meal	$3	15
750 lbs. English hay, 75 cts. per hundred	5	62
140 " Salt hay, 50 " "		70
Total	$9	47

Quantity of milk for the two weeks, 484 qts.

It will be seen from the above experiment, that Indian meal possesses the highest value for producing milk, differing, however, but little from oil meal. Many farmers object to the free use of grain of any kind, believing such feed to be too stimulating. But my experience is otherwise. I have twelve cows which, for the last five years, have dropped their calves in the fall of the year, and have been fed during the winter and spring, till they went to pasture, with as much meal or shorts as were used in the above trials, and were uniformly in as good health and better condition than a like number that dropped their calves in the spring, and had no grain of any kind during the year.

It should have been stated above, that my cows are kept in a tight barn, sufficiently ventilated during the days and nights, except when they are turned out to water about nine o'clock, A.M., and four o'clock, P.M., when they remain out about twenty minutes each way.

WILLIAM F. PORTER, Chairman.

SWEET POTATOES.

WE are rather late for the following directions, but in some situations it may still be seasonable, and it will do for all another year:

In the spring, as soon as all danger from frost is past, the hot-bed for sprouting the potatoes should be made, by boarding off the space intended therefor in a warm situation, and filling it to the height of two or three feet with manure from the horse-stable, and upon this a layer of three or four inches of fine chip-dirt must be placed, upon which the potatoes may be laid as closely as possible, and covered about two inches in depth with the same material, or with any fine rich earth. If the weather should prove very dry, an occasional watering with tepid water, or warm soap-suds, would be beneficial, or, if the nights should be cold and frosty, the hot-bed should be protected by covering it with any material most convenient. When the sprouts are sufficiently large to warrant good roots, they may be pulled from the potatoes and planted in ridges previously prepared.

The ridges are mostly made by throwing two furrows apart with the plough, and applying some well-rotted manure, then covering the same by returning the earth, thus forming a ridge of the height of ten or twelve inches, in which sets are to be planted six or eight inches asunder. The best time to plant them is immediately before or after a rain, or during a spell of damp weather, or even in the cool of the evening, if watered occasionally until fairly established.

The ground must then be kept mellow and free from weeds until the vines prevent further culture. When the vines are killed by frost, the potatoes should be taken up, and after remaining in the shade a short time to dry, those not intended for immediate use may be packed away in dry sand or earth in barrels or boxes, by first placing a layer of sand and then one of potatoes, until the vessel is filled. Upon the approach of cold weather, they should be placed in a situation secure from frost. In this manner they have frequently been kept till May or June. In packing them away, all potatoes that have been injured in taking up should be laid aside for present use. A soil moderately fertile and somewhat sandy, with a southern aspect, is mostly preferred for the sweet potatoe.

NIGHT-SOIL, ETC.

We commend attention to this subject, and invite our readers to notice the following from the volume recently published by Prof. Nash. We have given similar advice heretofore:

"In European countries, as also in some of our cities, this has been wrought by various processes into a dry, portable, inoffensive, but very powerful manure, under the name of *poudrette*. This is one of the forms in which the fertilizing agents of the city are returned to the country, whence they came.

On the farm the night-soil may be put to good use in a less troublesome way. After being carried off in the spring—or better, in the latter part of winter, while it is yet cool—the bottom of the vault should be covered, at least a foot in depth, with fine black peat or mud, previously prepared and dried for the purpose. A little of the same should be thrown down daily through the summer, and once a week or fortnight during the winter. If a little plaster be occasionally added, it will be well, though this is not essential. The peat itself will be sufficiently *deodorizing*, if put down in such quantities as to be kept fairly moist and no more. It will withhold all foul odor. It is well to have an opening in the rear of the building, and a pile of prepared peat lying near, that it may be thrown down without much trouble, lest it be neglected. Good farming requires daily attention to many little things, and unless a previous preparation for them be made, these little things, important in the aggregate, are apt to be lost sight of. A farmer might better bring peat several miles for the foregoing purpose than not to have it. In an ordinary family, as many as five loads of a kind of poudrette can thus be made, not as concentrated nor as portable as the article bought under that name in our cities, but sufficiently so for home use, and excellent for any soils except peaty, and for any crops except it may be for potatoes and other roots. For cabbages, wheat, corn, or clover, it would be first-rate. If used for corn, and especially if used as a top-dressing for old mowing, it would be well to apply plaster pretty plentifully with it. I know of nothing that will bring up red and white clover on an old mowing like it.

Many families make use of chloride of lime as a *deodorizer*, or *disinfecting agent*, about the privy. They pay for it ten or twelve cents a pound; and, at that, it is ineffectual unless used in considerable quantities. Peat is cheaper and better. When peat can not by any means be obtained, black, vegetable mould from the edge of the wood, or wherever great quantities of leaves have drifted together and decayed, will answer. If this can not be obtained, there is a sort of home-made chloride of lime, which can be prepared easily, and is worth more for agricultural purposes than it costs.

To prepare it, take one barrel of lime and one bushel of salt; dissolve the salt in as little water as will dissolve the whole; slack the lime with the water, putting on more water than will dry-slack it, so much that it will form a very thick paste; this will not take all the water; put on, therefore, a little of the remainder daily, till the lime has taken the whole. The result will be a sort of impure chloride of lime; but a very powerful deodorizer, equally good, for all out-door purposes, with the article bought under that name at the apothecary's, and costing not one twentieth part as much. This should be kept under a shed or some out-building. It should be kept moist, and it may be applied wherever offensive odors are generated, with the assurance

that it will be effective to purify the air, and will add to the value of the manure much more than it costs. It would be well for every farmer to prepare a quantity of this, and have it always on hand."

Again, he says:

"Night-soil should be removed to the land every spring. Its value, as a fertilizer, is greatly increased, if mixed with six or eight times its bulk of dried peat or swamp mud. Its value would be still more increased, if the peat or mud, in a dry state, could have been thrown in with it daily, or once in a few days during the previous year; and this either with or without (better with) a little plaster, would have prevented the bad smell from that source, which is too often noticed about premises. *Poudrette* can be prepared in this way at little expense, and quite as effective as much that is offered in market at a high price. Night-soil is valuable for grass-land, and for all kinds of grain. In whatever form it is used, it should be spread thinly over a large surface, rather than be put in large quantities in one place.

There is another article to which the last remark applies with great force. It is old plastering from the walls of rooms. This contains silicate of lime, carbonate of lime, and what is of more value than all the rest, *nitrate of lime*. This last is a very soluble salt, and is so valuable for any of the grain crops, but more especially for wheat, that not a particle of it should be lost. Every ounce of old plastering should be put upon the field. Even the rubbish of old brick walls should be pounded up and put upon the land. But this and old plastering should be spread thinly over a large surface. Probably a ton of either, if mixed with a compost that was to cover five acres, would benefit the first year's crop more than five tons spread on a single acre.

Whether the new occupant of this farm should go largely into the use of plaster, is a question for him to settle on the ground. He should, at any rate, have some on hand to use about his manures. There is a strong presumption in favor of plaster on a farm upon which nothing is known of its effects by experience. He should inquire of his neighbors. If their testimony is against the use of plaster in that region, *let him not believe it*, but let him make the trial for himself. He may make it on a small scale at first, so as not to injure him much if it fails. If, on the other hand, the testimony of the neighborhood is favorable to the use of plaster, he might take it as undoubted. A hundred neighborhoods have testified falsely against the use of plaster in their particular location, to where one has over-estimated its value. Very few are the locations where plaster is not worth the purchase-money, or more.

It is very true that plaster can not be relied upon alone. It is not a manure in the fullest sense of the word. It contains but two ingredients, and those are not all that plants need. Plants could not grow in plaster *alone*, but that does not prove that they should have *none*. The truth is, *it acts partly as a manure*—feeding the plants with its sulphuric acid and lime, the very ingredients which clover, corn, potatoes, and some other crops, largely require—and *partly as a stimulant*—hastening, by its lime, the decay of vegetable matter in the soil. In other words, *it feeds the plants a part of their food, and it hurries the vegetable matter in the soil to feed them more.* On dry soils it performs *another important office*—that of *attracting moisture.* Some say it has not this effect. I know very well that in its unaltered state it has not. Set an open barrel of plaster in the air, and it will remain dry. But it does not long remain unaltered about the roots of plants. The sulphuric acid and the lime part company, and in their transformations they perform the three offices I have described—*feed the plants, convert half-*

decomposed matter into vegetable nutriment, and attract moisture from the air and from the sub-soil. This last office is important on lands that are dry. On wet lands it should not be used till they have been thoroughly drained.

Plaster will not do well permanently without other manure. It requires that organic matter should be present. In pastures, this is supplied by the droppings of the cattle and by the decay of grass-roots. On mowings, it should be supplied by top-dressings; and on plough-lands, by harrowing in manure. It would be as unreasonable to complain of plaster because it will not act well always without other manure, as to find fault with roast-beef because it does not afford a suitable diet without other food. The same might be said of ashes. Land dressed with ashes alone, will soon be found in a sad condition; and yet the potash, soda, and lime they contain, are worth far more for agricultural purposes than the price generally allowed by soap-boilers. Their alkaline salts act favorably upon the silicates in the soil; they render insoluble silica *soluble*, and are therefore valuable on uplands; while on peaty lands, if well drained, and on any lands which abound in inert vegetable matter, their value is very great."

UNITED STATES AGRICULTURAL SOCIETY.

In our last number, we gave an epitome of the journal of the late meeting of this organization. But we had no opportunity for comments, on account of absence from home. We now say a word in relation to it.

We published an account of the organization of this Society at the time of its formation, and used hopeful terms in reference to its future. But our comparative silence since that has not been from any change in our views in relation to it, but because the circumstances of the Society as to funds, &c., did not furnish them convenient facilities for accomplishing very much, while other matters were constantly pressing upon our attention, and asking a place in our pages. The Society has had no means by which to wield the great energies which its list of members, well instructed in the art and in the science of agriculture, might otherwise have put forth.

Again: The result of their collected and concentrated wisdom, nearly to the present time, was put forth in but two issues—of moderate-sized pamphlets, only one of which was ever received at this office, and that one, so far as we can recollect, did not excite any special admiration, on our part, for the marvellous ability of their official organ, and hence, in the absence of such stimulus, we were content to remain silent.

The state of things in this last respect has now materially changed. The last and recent issue of the Journal of the Society, under the editorship of Mr. King, of Boston, is an admirable collection of well-written and practical treatises. A copy should be in the hands of every agriculturist. One of our late numbers contains several pages taken from that issue, though being in some doubt whether they were original there, we thought it proper to credit the author himself. We are not better informed now on the question of "first appearance," but presume, on the whole, that their *first impressions* were in the pages of that journal. With Mr. Wilder, Mr. King, Mr. French, Mr. Proctor, Mr. Poore, and other gentlemen, for its directors in that section of country, of whose remarkable abilities we are personally informed, failure

is a mere impossibility, and inefficiency, except from actual withholding of the pecuniary means, entirely out of the question. Leaving these Northern regions for the sunnier South, we find the same class of learned, talented, and influential gentlemen, officers of State Societies, and other members, all united to make the Society energetic and useful. Their treasury is also in very tolerable condition, and we look for results of no small importance from the combined movements of these gentlemen. We earnestly bid them anew, God speed. Their influence will be felt in every part of the country.

AMERICAN POMOLOGICAL SOCIETY.

THE fifth session of this National Association will be held at Horticultural Hall, in the city of Boston, Massachusetts, commencing on Wednesday, the 13th day of September next, at 10 o'clock, A.M.

It is intended to make this assemblage one of the most interesting that has ever been held in this country on the subject of Pomology. All Horticultural, Agricultural, and other kindred Associations, of North America, are therefore requested to send such number of delegates to this Convention as they may deem expedient.

Pomologists, nurserymen, and all others interested in the cultivation of good fruit, are also invited to attend the coming session.

Among the objects of this Society are the following:

To ascertain, from practical experience, the relative value of varieties in different parts of our widely-extended country. To hear the reports of the various State fruit committees, and, from a comparison of results, to learn what fruits are adapted to general cultivation; what varieties are suitable for particular localities; what new varieties give promise of being worthy of dissemination; and especially, what varieties are generally inferior or worthless, in all parts of the Union.

In order to facilitate these objects, and to collect and diffuse a knowledge of researches and discoveries in the science of Pomology, members and delegates are requested to contribute specimens of the fruits of their respective districts; also papers descriptive of their art of cultivation; of diseases and insects injurious to vegetation; of remedies for the same, and whatever may add to the interest and utility of the Association.

The Massachusetts Horticultural Society has generously offered to provide accommodations for the Society, and also to publish its proceedings free of expense.

All packages of Fruit intended for exhibition may, therefore, be addressed as follows: "For the American Pomological Society, Horticultural Hall, School street, Boston, Mass.;" where a committee will be in attendance to take charge of the same.

All Societies to be represented will please forward certificates of their several delegations, to the President of the American Pomological Society, at Boston.

MARSHALL P. WILDER, President.

H. W. S. CLEVELAND, Secretary.

Boston, Mass., April 1, 1854.

DISCUSSION ABOUT CATTLE.

At a late meeting of the Agricultural Club in Boston, Mass., Sanford Howard presented the following excellent suggestions upon the comparative merits of various kinds of cattle:

Breeds may be classed as *natural* and *artificial;* the peculiar characteristics of the former are the result of natural causes; those of the latter, the result of man's interference. The Merino and Scotch black-faced sheep, West Highland and Devon cattle, are examples of natural breeds; the Leicester and improved Cotswold sheep, Ayrshire and improved Short-horn cattle, are examples of artificial breeds. Breeds of cattle must be chosen according to the situation in which they are to be placed, and the purposes for which they are designed. Cattle are wanted for beef, milk, and labor. These properties are in some degree antagonistical; they can not be combined in the highest perfection in the same animal. For instance, the fattening animal should possess, as much as possible, a rotundity of form, with a broad chest, and an even balance of the fore and hind quarters; whereas the milker should be characterized by flatness rather than roundness, and a considerable preponderance of weight in the hind quarters. Animals which have the most extreme tendency to fatten, are deficient in the muscular fibre and nervous energy necessary to confer activity and strength. Opinions in reference to the comparative merits of breeds for this section, must be in a great degree conjectural, owing to the limited trials which have been made; but we may be guided in selections for particular purposes, from what is known of their characteristics. On this basis, the lecturer submitted the following list:

As Dairy Stock—

1. For poor and rough soils, the Kerry breed, indigenous to the mountains of Ireland, and represented by all authorities as combining remarkable hardiness of constitution with superior dairy qualities, especially for the production of butter.

2. For better soils, and for milk-selling establishments, the Ayrshires.

3. For cities and towns, the Jerseys, at the same time testing them by fair trials, as to general adaptation.

4. A selection from the common, or so-called native stock, to be subjected to a systematic course of breeding.

5. Crosses of the Ayrshire, and of the Jersey, with the common stock, the offspring to be kept separately for a sufficient period to ascertain their qualities.

As Fattening Stock, of Secondary Value for the Dairy—

1. For poor and rough soils, and a severe climate, the West Highland Scots.

2. For somewhat better soils, the Galloways and Devons.

3. For medium quality of soil, the Herefords.

4. For the best soils and milder climate, the fattening variety of Short-horns.

The Herefords, Devons, and West Highlanders are excellent draft cattle.

In this climate, owing to the extremes of heat and cold, strength of constitution is an important requisite in cattle that are obliged to undergo more or less exposure at all seasons. On this account, as well as for other intrinsic properties, the lecturer advocated strongly the introduction of the West Highlanders.

INQUIRIES FOR FARMERS.

EDITORS OF THE PLOUGH, THE LOOM, AND THE ANVIL:

GENTLEMEN: Permit me, through the medium of your invaluable publication, to make one or two inquiries. I hope they will be answered by practical farmers:

The best mode of cultivating wheat when sown in drills? The best implement, or implements, in use for cultivating wheat sown in drills? The best machine for drilling wheat? Together with any remarks of practical utility on this subject, that may suggest themselves to the mind of the writer.

I have never seen wheat sown any other way than broadcast, and I doubt if a dozen farmers in the county have seen it drilled. Most of our farms lie in the prairies; consequently, we have neither roots, stumps, nor stones to interfere with the use of the best agricultural implements. Our prairies, in a state of nature, are covered with a thick coat of sedge-grass. To draw a fifteen-inch plough in it, requires a team of six or seven yoke of oxen. After the sod has been turned, it lies several months, before the grass-roots rot sufficiently to admit tillage. It is then generally "cross-broken," with a yoke of oxen, or pair of horses, harrowed, or brushed, and either sown in wheat or planted in corn. It pays better to sow it in wheat the first year. Our average crop of corn is about thirty bushels per acre. Of wheat, the average, according to the present mode of cultivation, will not exceed twelve bushels. But I am saying more than I designed. Yours, R. SANSOM.

Prairie Home, Williamson Co., Texas, April 1, 1854.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

BREEDING DOMESTIC ANIMALS.—NO. I.

BY P. A. BROWN, LL.D., PHILADELPHIA.

THERE is no subject relating to agriculture more important than *breeding*. Without the aid of domestic animals, this honorable and useful branch of industry could not be carried on for a single season: where would be the use of the plough, with no horses or oxen? what would become of the dairy were the cow annihilated? and how is the farmer's family to be protected from the inclemencies of the seasons, but by the covering of the sheep and the goat? It follows, therefore, that any discovery which relates to the domestication of the lower animals, must always be of the first importance. But of domestic animals there are various kinds, as regards their usefulness, and consequently their relative value to the agriculturist, and to the community of which he is a member. It ought to be borne in mind, that a miserable horse, that can hardly draw his own weight, eats as much hay and oats as the high-bred animal who performs the greatest tasks. Beside which, it has often been remarked that hirelings will always take more care of a fine-looking animal than of a poor, sorry-looking beast, who appears to be waiting till his turn comes to die. A friend of mine had a fine Durham cow, which his hired man was constantly currying, and when, by accident, she

died, the fellow was melted into tears. And, lastly, if the farmer has to pay more for an animal that is well bred, he always gets a higher price for the progeny, of which he may feel an inclination to dispose. The great aim, therefore, of every farmer should be to have about him *the best breeds, and nothing but the best breeds*, of domestic animals. Whenever I visit a farm, and encounter a miserable, ill-proportioned horse, or a raw-boned, slab-sided cow, or a narrow-breasted, long-legged sheep, I set the owner down for a slovenly, thoughtless person, who is destined never to rise in his profession. Such a one never reads, attends no cattle-shows, and profits nothing by the improvements that are in his neighborhood.

Some of these persons endeavor to excuse their inattention by urging that there is a difficulty in understanding the rules of breeding; but this is an entire mistake; for although it is true that the breeding of domestic animals depends upon the laws of nature, (the perfect understanding of which requires some study and forethought,) yet these rules, like all those emanating from this high source, are in themselves so simple, and so easily understood, that the industrious farmer will find no insurmountable difficulties to encounter.

The first rule is, to breed from nothing but a *pure stock*. This rule is so obvious upon its mere statement, that one is surprised that it should ever be misunderstood or contravened. Yet there are many persons, well informed in other respects, who set it at defiance as if it was of no value. It is no uncommon occurrence for a sheep-breeder, for instance, to purchase at a high price, a first-rate merino ram, and breed him with the commonest native sheep that happens to be on his farm. But such a one ought to reflect, that both the sexes concur in the formation of the individual that is to represent them; and that the mother gives birth, sometimes, to one made in her own image, and at other times to one in the image of the father. Here it is seen that she is capable of producing two distinct types of animals. This twofold effect is so certain, that naturalists have often referred the individuals derived from the same parents as distinct species. Now, if we apply this rule to the case above supposed, of a pure merino ram being coupled with a common country sheep, we will see at once what sort of a flock the farmer who follows this practice is preparing from his ill-timed parsimoniousness. He goes to rest under the expectation, that having used, as the male breeder, one of pure blood, he will be sure, after a few generations, to have a *pure flock;* but he wakes up to the certainly that all his time and labor have been uselessly expended, by adopting this half-way or rather less than half-way measure. And the worst part of the affair is, that this well-meaning, but badly-instructed farmer, has in a few years involved his flock in a difficulty for which there is no remedy but to begin his breeding all anew, and upon the approved plan of using nothing but the *pure* blooded of both parents. This generally proves to be not only a loss of time and money, but is very apt to disgust the breeder, who is too prone to lay the blame on any body or any thing but himself; when it is obvious to every one else that he alone has been in fault.

We would therefore sincerely recommend to all breeders of domestic animals, to make use of none but the *pure breed of both parents*, when he will find that having done his part, nature will never deceive him, but will always perform hers.

But several persons on whom I have endeavored to enforce this rule, while they acknowledge that it is correct, complain of the difficulty they encounter in determining upon a *pure* animal. The vender, sometimes from dishonesty, but more frequently from ignorance, insists that the animal is of the pure

breed; and sometimes offers, in confirmation, a true or imaginary pedigree, of the validity of which the purchaser is not a perfect judge. To obviate this difficulty, I have laid down (in Frichologia Mammalium) a rule by which the plainest farmer (in the case of sheep, to which I have given the most attention) can decide for himself, without running the risk of being deceived.

I was once waited upon by a gentleman, who was about to enter largely into the business of sheep-breeding, to give him some information. I exhibited to him my collection of pile, and made him acquainted with some of the rules of breeding. He made the complaint to which allusion is above made, whereupon I instructed him how to judge of the purity of breeds of sheep. He declared that he esteemed that information worth more to him than one thousand dollars. Upon this I handed him the subscription-book for my work on hair and wool. He read it over attentively, and returned it, but *without his signature!*

"Aviendo pregonado vino, venden vinagre."—*Spanish proverb.*

SQUASHES AND PUMPKINS.

BY THADDEUS WILLIAM HARRIS, HARVARD COLLEGE.

I AM now acquainted with ten different kinds of pumpkins and squashes, belonging to the same group as the Valparaiso, Cuba, and Marrow.

1. The mammoth pumpkin, of Potiron, (*Cucurbita maxima.*) The fertile flowers have five stigmas, and the fruit five carpels; having raised it in my own garden during the past summer, I can vouch for the fact.

2. A glaucous or grayish-green pumpkin or squash, more or less turbinated or top-shaped, growing to a large size, (three and a half feet or more in circumference,) mistaken by some seedsmen for the mammoth pumpkin. It was raised in my garden in the summer of 1851, and was found to have four or five stigmas, and the same number of carpels.

3. Mr. Cole's Connecticut pie-squash or pumpkin. Spherical or spheroidal, three and a half feet in circumference. Raised in my garden in the summer of 1851. Stigmas mostly four; in a few flowers, five. Carpels mostly four; a few of the fruit had five.

4. Elongated Valparaiso squash, tapering very much at each end, striped longitudinally with white. Raised from Valparaiso seed in the summer of 1851, in my garden. Stigmas and carpels five in number.

5. The common ovate Valparaiso I have not raised; but have bought and cut many specimens, in all of which I found four carpels. I have examined the young fruit, growing in grounds of my friends, and found often five carpels.

6. The autumnal marrow, introduced into notice and use by Mr. Ives, of Salem. This forms an exception to the general rule in the fruits of this group; having ordinarily only three carpels, and but three stigmas. Four in some rare cases are, however, to be found, as already stated.

7. The Cushaw squash, probably introduced from Louisiana, where it was known and cultivated more than one hundred years ago. It is mentioned by Le-Page du Pratz, in his Histoire de la Louisiane, Vol. II., p. 11, by name of *Giromon en forme de corde-chasse*, (hunting-horn,) and by the translator

of the work, by the vernacular name of *Cushaw*. This is a crook-necked squash, with permanent nipple-formed style, and stem like that of the marrow. It has only three carpels, at least I found but three in the few specimens that grew in my garden in 1852. It is so tender and delicate, that it rots in our climate before it becomes fully ripe.

8. The Acorn squash, evidently nothing but a variety of the one called by French writers, *Le Pepon turban*, (*Cucurbita piliformis* of Duchesne.) Fine specimens were raised in my garden in the summer of 1851. It is the heaviest squash of its size that is known to me, and one of the best flavored. Flowers mostly with five stigmas, some with four; carpels five or four.

9. Mr. Stetson's Cuba squash. Though I have not yet cut it, I am convinced from its external characters that it must contain five carpels.

10. Mr. Dunn's round, rough-skinned pumpkin or squash, weighing one hundred and fifty pounds, which was exhibited at the last annual Horticultural Exhibition. This probably had five carpels, if its external characters are to be relied upon.

In the same group are to be placed Mr. Hyde's Coquimbe squash, and Mr. Pope's California squash, which were exhibited last September. The number of carpels in these is unknown to me, not having seen them cut. Probably in both will be found *more* than three carpels.

I have enumerated these kinds, in order to show that the group characterized by me has been established upon personal examination and dissection of most of the known varieties; and that the character of five or four stigmas and the same number of carpels (rarely three) is one which prevails in this group.

Heretofore it has been generally understood, and is so stated by most botanists, that pumpkins and squashes were originally natives of Asia. On the contrary, I find in ancient works abundant evidence that they were unknown in the Eastern hemisphere before the discovery of America, and that they were originally natives of the tropical and warm parts of America, and that they were extensively cultivated by the native Indians from Canada to Chili, before any European settlements were made on this continent.

After a very careful examination of the plants and the fruits of as many kinds as I could obtain or raise, I have discovered certain distinguishing characters which will enable us to class all of them in three natural groups. These are:

1st. Summer squashes—such as the broad-scalloped, the long and warted, the round or orange, the variegated or gourd-squashes, and various other kinds. Most of these (but not all) have upright vines which do not run, (hence sometimes called bush-squashes,) and small or feeble tendrils or claspers. Their leaves are very rough, and mostly five-lobed, (like a grape-vine leaf.) The fruit when cut across, is found generally to have five double rows of seeds; more rarely, only three double rows. The fruit-stem is enlarged next the fruit, and is deeply five-furrowed and five-angled. The fruit (which ripens early) is fit to be eaten only in an unripe state, or while it still remains tender. When fully ripe, the rind becomes whitish or pale, hard and brittle, lik a gourd-shell; and the pulp is dry and spongy. The seeds are small and thin, and of grayish or dirty yellowish color.

2d. Pumpkins and winter squashes—including our common New-England field-pumpkins, the crook-necked squashes, the custard-squash, and many other kinds. All these have running vines, with strong-branched tendrils or claspers, very rough, more or less deeply five-lobed leaves, and a five-furrowed and five-angled fruit-stem, which is very much enlarged toward the fruit.

On being cut across, the fruit is found to have only three double rows of seeds. The fruit is fit to be eaten only when fully ripe, and it may be kept, with care, all winter. It does not dry up like summer squashes, but finally rots and becomes soft and spoiled throughout. The rind, mostly thin and tender, never becomes dry, woody, and brittle; and the pulp remains fleshy and succulent till it decays. The seeds are larger than those of summer squashes, but are also thin and grayish or yellowish.

3d. Nippled pumpkins and squashes—such as the mammoth pumpkin or potiron, your Cuba squashes, Valparaiso squashes, the acorn squash, the autumnal marrow-squash, and some others. All these have running or climbing vines, with strong branched tendrils. The leaves are rather soft, some of them as soft and velvety as those of the mallow; they are never deeply lobed, but more often nearly round or heart-shaped. The fruit stem is short, thick, wrinkled, but not five-angled and not five-furrowed, and when green is nearly as thick at one end as at the other. The fruit, when cut across, is found generally to have four or five double rows of seeds, more rarely only three double rows; and I have found this smaller number only in the autumnal marrow-squashes, and it is by no means a constant character even in them, four or five double rows being occasionally found in them. The fruit is fit to be eaten in autumn and winter, and only when fully ripe. It is always distinguished, however various the shape and size, by having a small, nipple-like projection at the blossom end; this projection being the permanent style of the blossom, the rind, which is generally remarkably thin and tender, never becomes hard, dry, woody, and brittle. The flesh, often of a rich orange color, and remarkably sweet and fine grained, never dries up or becomes spongy, like that of summer squashes, but remains succulent till it rots. The seeds are large, broad, thick or plump, mostly of a beautiful, clear white color; but in certain very dark-fleshed varieties, the seeds are of the color of old ivory, or cream-colored.

Now, I am strongly inclined to the belief that all the pumpkins and squashes of this third division were *originally natives of the western side of America*, as Chili, Peru, Mexico, and California. Some of them have doubtless been introduced into the West Indies, whence they occasionally are brought to our markets.—*Journal U. S. Agricultural Society.*

CULTURE OF MELONS, &c.

With judicious culture, melons of excellent quality may be produced in abundance. Those who wish to be in season, should lose no time now in preparing the ground for it. For each hill, dig a hole two feet deep and three feet wide, and fill one foot of the bottom with rich manure; then fill to the natural surface with fine compost of rich earth and mould. In this, when the weather is warm enough to insure quick germination, plant your seeds at equal distances apart. If the weather should be very dry, the hills should be watered once a day, with water that has been exposed to the air long enough to attain an equal temperature with the atmosphere; or better still, set a tall and narrow box on the centre of this hill, and fill it with horse-stable manure; once in a day or two, at night, pour in a few quarts of water, and let it leach through the manure. When the plants show themselves above ground, defend them by a box covered with millinet, to keep off the bugs, which will also serve to ward off cold winds. When the plants are well established, select a few of the best, and pull up the others. Keep the plants free from weeds.

Cucumbers may be treated in the same way.

CINCINNATI HORTICULTURAL SOCIETY—STRAWBERRIES.

This Society held a meeting on the 15th of April. We find the following report of Dr. John A. Warder among its proceedings, illustrating a subject of especial interest to our readers generally:

Finality on the Strawberry.—Wild or cultivated, the strawberry presents, in its varieties, four distinct forms or characters of inflorescence.

First: Those called *Pistillate*, from the fact that the stamens are abortive, and rarely to be found without a dissection of the flower. These require extrinsic impregnation.

Second: Those called *Staminate*, which are perfectly destitute of even the rudiments of pistils, and are necessarily fruitless.

Third: Those called *Hermaphrodite*, or perfect, having both sets of organs, stamens and pistils, *apparently* well developed. These are not generally good and *certain* bearers, as we should expect them to be. With few exceptions they bear poorly, owing to some unobserved defect, probably in the pistils. One tenth of their flowers generally produce perfect and often very large berries.

Fourth: A rare class—a sort of *subdivision* of the preceding, has not only hermaphrodite flowers, but also some on the same truss that are of the pistillate character; and sometimes, in the same plant, a truss will be seen, on which all the flowers are pistillate.

Now these four divisions are *natural* and *real;* they are also founded upon permanent characters, so far as we have been able to discover, after a most thorough investigation, extending through a long series of years, during which millions of strawberry blossoms have been examined with the severest scrutiny. Other forms may exist, and it is not claimed to be impossible that we may yet find a seedling which will have the general character of a *pistillate*, that may show an occasional perfect or *hermaphrodite* flower, as a peculiarity of that individual, but we have never yet observed such a variety; and further, we believe that whatever impress, as to peculiarities of foliage, pubescence, habit, inflorescence, or fruit, each distinct seedling may receive with its origin, it will be retained in its increase by runners, so long as the variety remains extant. Seedlings may vary from the parent, but off-shoots will not be materially different, except by accidental malformation, or by development of unimportant organs. On motion, adjourned.

THE ORANGE FAMILY.

The more remarkable varieties of the Orange, as given by Mons. Boiteau, in the *Histoire Naturelle des Orangers*, and published in the *Bon Jardénier* for 1842, are as follows:

The China, pear-shaped, Nice ting-fruited, fingered, blood-red, ribbed, sweet-skinned, Mandarin, and St. Michael's. The last two are by far the best worth cultivating for their fruit. The *Mandarin* orange is small, oblate, with a thin rind, which separates of itself from the pulp, so much so that, when fully ripe, the latter may be shaken about in the inside like the kernel of some nuts. It is originally from China, but is now cultivated in Malta. The flesh is of a deep orange color, and its juice and flavor superior to those of most

varieties. The *St. Michael's* orange is also small, but the skin, instead of being of an orange color, like that of the Mandarin, is of a pale yellow; the fruit is generally without seed, the rind thin, and the pulp exceedingly sweet. It is the most delicious of all the oranges, and the tree is a great bearer. It is generally cultivated in the Azores, from which it is shipped in great quantities. The *Tangerine* orange is strongly recommended by some.

The *Bigarade, Seville,* or *bitter orange,* has elliptic leaves, with a winged stalk, very white flowers, middle size, globose, deep yellow fruit, the pulp bitter and acid. This is the hardiest variety of the orange, and that which has the largest and most fragrant flowers, which are produced in great abundance. The fruit is chiefly used in making marmalade. The tree is that chiefly grown by the French gardeners for its flowers, to gather for nosegays; the varieties are the horned, the female, the curl-leaved, the purple, the double-flowered, the Seville, the myrtle-leaved, and the Bizarre. The *curled-leaved Bigarade* has small curled leaves, thick clusters of flowers at the end of the branches; the plant is very hardy, and it is that most generally cultivated in French gardens for its flowers and its fruit. The *double-flowered Bigarade* is prized on account of its fragrant double flowers, which last longer than those which are single. The plant requires a very rich soil. The *Seville Bigarade,* or Seville orange of the shops, has round, dark fruit, with an extremely bitter rind. It is imported from Spain, and used for marmalades, bitter tinctures, candied orange-peel, and for flavoring curaçoa. The *myrtle-leaved Bigarade* is a *lusus naturæ,* with deformed leaves, purplish or white flowers, and fruit half Bigarades and half lemons.

The *Bergamot orange* has small flowers and pear-shaped fruit, the whole plant having a peculiar fragrance, much valued by the perfumer, who obtains from the flowers and rind of the fruit his bergamot essences. The rind, first dried and then moistened, is pressed in moulds into small boxes for holding sweetmeats, to which they communicate a bergamot flavor. There are several varieties of this species in the Genoese nurseries.

The *Lime* has obovate leaves on a wingless stalk, small white flowers, and roundish, pale-yellow fruit, with a nipple-like termination. The leaves and general habit of the plant resemble those of the lemon; but the acid of the pulp of the fruit, instead of being sharp and powerful, is flat and slightly bitter. It is principally used in flavoring punch and confectionery. Among the varieties are the Pomo d'Adamo, in which Adam is supposed to have left the marks of his teeth.

The *Shaddock:* the leaves are large and winged, and the flowers and fruit very large and roundish; the skin of the fruit is yellow, and the rind white and spongy; the pulp is juicy and sweetish. The plant forms an excellent stock for grafting other kinds upon; the fruit makes a splendid show at table, and is found cooling and refreshing. It has been grown successfully in the open air in the city and vicinity of Mobile. M. Boiteau considers the "forbidden fruit" of the shops to be a variety of this species, but others make it a variety of the lemon.

The *Sweet Lemon:* the fruit has the leaves, the rind, and the flesh of the lemon, but with a sweet pulp. There are many varieties in Italy, but very few are cultivated in France or England. The flowers differ from those of the lime in being red externally.

The *True Lemon:* leaves ovate-oblong, pale green, with a winged stalk, flowers red externally, fruit pale yellow, with a juicy and acid pulp. Unlike the other kinds of citrons, the lemon on the continent is generally raised from seed, and hence the great difference in the quality of the fruit obtained in the shops, as also the sweet orange daily imported from the Island of Cuba.

The *Citron:* leaves oblong, flowers purple externally, and fruit yellow, large, warted and furrowed; rind spongy and thick, very fragrant; pulp subacid. Supposed to be the Median or Persian apple of the Greeks. As an ornamental tree, it is one of the best of the genus citrus; a delicate sweetmeat is prepared from the rind of the fruit, and the juice, with sugar and water, forms lemonade, and is used to flavor punch and negus, like that of the lemon. The Madras citron is the largest and best variety, and has been grown to an enormous size.

Oranges, like most other fruit-bearing plants, are propagated from seeds. The seeds may be sown at any period of the year, and slightly shaded during the hottest hours of the day. When the plants are from sixteen to twenty inches high, they are fit for grafting, taking care that the leading shoot be not injured, nor any superfluous side-shoots allowed to remain on them. They can be grafted, when about the thickness of a quill, in the following manner: Young shoots of a favorite variety are selected, being rather smaller than the stock, and about four to six inches in length; the stocks are prepared for them by taking a thin slice off one side (at about half their height) just merely to remove a very small portion of the wood; the graft is prepared in like manner, by merely taking off a thin slice of it; they are fitted together in the usual manner and fastened with fresh matting, which is wound round the stock from about an inch below the union, and carried up about an inch above it; no clay, but a little fine moss, is used to envelop the part operated on, and kept constantly moist; the head or leading shoot is not now shortened, but left growing until some weeks after the union is ascertained to be complete. It is then headed down as close to the part of the union as convenient, but not too close, for fear of displacing the graft; the remaining piece of stock is removed some months after the graft is established, and, if carefully done, the part of the union will, in a few months longer, scarcely be visible. Orange-trees are also propagated by budding, either when the stocks are young, or even when they are of considerable size. Handsome plants may be formed by this method when young stocks are used, but this can not be the case when the stocks have attained a large size; and hence arises a great defect in many of those that are annually imported into this country from France, and particularly from Italy, &c., when the stock operated on is often from one to three inches in diameter at the top, and in consequence seldom forms a union so complete as to conceal the amputation of the stock. Seedling orange-trees in this climate will fruit in six years. Observing that young seedlings put out thorns at the base of the leaf, and as long as they appear on the young wood, no fruit can be looked for, as the tree is in too luxuriant a state, which should be corrected by cutting in the roots and reducing the soil with loam, turf, and fine gravel. The practice of trimming and heading down orange-trees is radically wrong—as by that treatment it is impossible for the tree to bear fruit, for in spring they bring forth strong thorny wood, and are no nearer bearing fruit than when only one year old.

In the management of orange-trees in large boxes and tubs, great care is requisite to ascertain that the water reaches the roots of the plants; for the balls of soil become so firm and compact that the water will not penetrate them, but passes off between the balls and the sides of the box; the compactness of the ball often arises from the fineness of the soil used in potting. The present mode in every case is to use comparatively rough, turfy soil, more or less mixed with fragments of stone. When orange-trees in boxes are placed in the open air in the summer season, the situation ought always to be partially shaded.

A CHEAP MODE OF PROCURING A VALUABLE BONE MANURE.

A WRITER in the *Country Gentleman* says, in reference to the cultivation of the potatoe, and successful attempts to prevent attacks of the rot: "We know a gentleman who for eight years has manured potatoes with bones fermented in ashes, has had good crops uniformly, and not one of them has rotted; but unfortunately for the conclusion to which he would have been glad to come, he has planted other potatoes, every one of these eight years, with all sorts of manures, and some without any, and neither one of these rotted, except a very few where no manure was put. The bones in the case just alluded to were treated thus: In a large family, consuming much butchers' meat, the bones were thrown into a hogshead from day to day; ashes as taken from the fires daily were thrown upon them; enough water to keep the whole moist and to prevent the gases escaping, were added from time to time, the falling rain generally being sufficient, as the hogshead was placed in the open air, away from all buildings. When one hogshead was full, another was taken. The bones treated in this way retained their form and size, but became so soft as to be easily cut through with the shovel and rubbed down with the back of the shovel into powder, with some extra ashes or dry earth. The oily matter of the bones, together with the potash of the ashes and the water thrown on, becomes a saponaceous mass, and the phosphate of lime in the hardest part of the bones is diffused through the soapy mass in a state of exceedingly fine division. Bones thus fermented in ashes are exceedingly valuable for potatoes and for Indian corn, and probably for all crops. There is reason, from actual trial, to believe that the effect on the land is permanent, lasting for several years."

CURIOSITIES OF THE PATENT OFFICE—AGRICULTURAL IMPLEMENTS.

DURING the last year, 144 patents were granted for agricultural implements, twenty-seven of which were for harvesters, power-reapers, mowers, &c. The following abstract of this interesting department of invention, as exhibited in the Patent Report, is given in the *Scientific American*:

"Three patents were granted for horse-power potatoe-digging machines; the models of two of these we have seen, but have not yet had the pleasure of seeing a large one in operation. Fifteen patents were granted for improvements in ploughs, and four for cultivators. No less than twenty-six were granted for seed-planters. This number is very large, considering that such machines are of no recent origin; it shows the importance of this class of mechanics, and the dissatisfaction entertained with those already in use. The devices patented, however, were mostly confined to the mode of distributing the seed; the novelties patented are said to be small, but that of B. D. Sanders, of Holiday's Cove, Va., for operating the shove-rod to work the valves by friction-rollers and rotary-cam, is a very good one. Three patents were granted for horse-rakes, and threshers and separators; one of the latter consisted in having an inclined, rotary, cylindrical straw-carrier, supported on friction-rollers. This cylinder is full of holes, and as the straw is carried, the grain falls down through the openings. Ten patents were granted for hullers

and smut-machines—one of them being for washing and scrubbing, and drying the grain. One patent was granted for a weigher combined with a winnower. The weighing apparatus is secured in such a manner to the machine, that when the measure is filled up to the proper weight, the balance tips the weighed grain, which is thrown upon inclined ways, and immediately starts off on a railroad track to the grain-depot. Four patents were granted for corn-shellers; in one the ears are allowed to accumulate, to act in the mass as an elastic bed against the spiral shelling projections. Three patents were granted for straw-cutters, and nine for miscellaneous agricultural implements, one of them being for a metallic tube scythe-snath."

NEW-YORK.—"THE SEASON."

NEW-YORK promises fine opportunities for affording gratification to the thousands of visitors that are to visit the city the coming season.

The CRYSTAL PALACE stands in all its beautiful proportions and graceful architecture, and within it offers a richer show than can be seen elsewhere on the continent. It is true that some very rich goods are removed. It is always with a degree of sadness that we pass the court so lately occupied by our excellent friend, M. La Hoche, in whose goods we were more interested than in those in any other part of the exhibition. The next court was ornamented by the Gobeline tapestries, which have also disappeared; and on the opposite side of the nave the devotional face of St. John no longer captivates us by its unrivalled artistic excellence. But a stranger finds all these sections occupied with excellent wares. France does her next best, after the show of M. La H.; and for the Gobelines we have the best of Turkish goods. Powers' group of statuary is removed from beneath the dome; but, while Pagani's "Eve after the Fall" remains, the finest statue ever yet seen in this country is within reach; and though we miss "The Child's First Grief," "The Industrious Girl" is there, and defies competition. But few pieces of statuary are removed except those above-named. Of course this part of the show is still very rich and extensive. The PICTURE GALLERY, to one not familiar with its arrangement, would still appear undiminished in its attractions, though we look in vain for not a few pictures which we have gazed upon so often with undiminished pleasure. The MACHINE ARCADE requires most labor to bring it up to a standard that will compare at all with the abilities, and indeed with the obligations of the country. We should like to devise some mode—through the Patent Office, for example, by which exhibitors in this department should be entitled to receive some especial privilege. Such, for instance, as priority of examination—diminution of charges—or some other consideration that should be effective in securing a satisfactory display of the extent and excellence of American machines.

This exhibition will merit the attention of visitors for a long time to come, and will no doubt excite even a more general notice than during the preceding summer. (See notice on another page.)

MUSICAL ATTRACTIONS will also, no doubt, be well and abundantly provided. We expect again to listen to the unrivalled strains of Madam Sontag and her troupe, so universally and so deservedly admired. New aspirants for public favor will also, no doubt, present themselves, while the various "Minstrels" will continue to delight crowded houses as heretofore.

Magicians of different sorts. The unrivalled Blitz, who for years has stood without an equal in his peculiar department, and who tells you that he is deceiving you in each of his wonderful tricks, and the far less worthy spirit-rappers, tippers, writers, *et id omne genus*, who not only deceive many others, but themselves too, while they constantly avow themselves no cheats at all,—all these open their doors for all who will enter them. On the stage, little Eva will still converse, with the wisdom of age, with the childlike Uncle Tom; and Wild Maggies be nightly transformed into devout and efficient ministers of the truth. "The Elephant" will still be gazed upon, at Barnum's Museum, while one of the most remarkable of all the wondrous things, is the manly form of the industrious, persevering, and efficient owner of this great concern, who, among the "intelligent," judicious, and business men of this great city, has few equals and no superiors. Giants and dwarfs, lions, hyenas, and a long list of curious animals, natives of other climes; picture galleries, and other exhibitions of kindred sorts; the cemeteries, the libraries, the churches, and other public buildings of the city; and, more glorious than all, the beautiful scenery of the harbor of New-York, its shores almost covered with the cities of Brooklyn, Williamsburgh, Jersey City, &c. All these will consume a week or a month, as the circumstances of the traveller may permit.

The Latting Observatory gives an opportunity for obtaining a bird's-eye view of the city, particularly in its upper half, which is not only extensive, but minute, each street lying at your feet, like the block-town of the nursery, while the North and East rivers, and even the harbor itself, are but narrow strips in the great map you look upon.

Hence we expect great crowds among us in the months to come.

SCULPTORS AND SCULPTURE.

We purpose to give our readers a somewhat extended view of this subject, in the months to come, and begin with Grecian art. We are moved to this, not only by the fact that Mrs. Lee, in her book noticed in another page, has given us peculiar facilities for such service, but also to qualify our readers for enjoying such treats as they have had, and may again have, at the Boston Athenæum and the Crystal Palace, and also in travels abroad. An untutored sailor would enjoy a bold figure-head as well as Pagani's Eve. It requires culture to be interested in the fine arts.

Phidias was born at Athens 488 years before Christ. His first attempts were under the immediate influence of Homer's poems. He amused himself with imitations of insects and fishes, so perfect that it used to be said, "Give them water and they will swim."

The Parthenon is the work of Phidias, who was eminent in geometry, etc., as well as in painting. This superb structure was of white marble, 270 feet in length and 98 in breadth, supported by 46 fluted pillars of the Doric order, 8 being at each front and 15 on each side, and each 42 feet in height and 17 in circumference. The pediments of the fronts were ornamented with numerous statues, larger than life and of admirable workmanship. Basso-relievos, of admirable design and workmanship, were also added to other embellishments. In the interior of the building was the noblest work of Phidias, the chrysoliphantine figure of Minerva. The eyes of the statue were of precious

stones, that changed their lustre with the changing rays of light, seeming almost like emotion of soul. The robe of vestment was entirely of gold. The face, neck, and nude parts, of ivory; the ægis, the helmet on her head, the drapery, and the wings of the figure of Victory, which she held in her left hand, were all of burnished gold. The statue of the goddess measured 27 cubits, or 39 feet 7 inches, in height. It stood in the centre of the temple.

Phidias had previously produced a statue of Pallas, in bronze, a branch of art which he brought to perfection. This statue was placed on the acropolis, representing a guardian deity. So lofty was her height, that voyagers who rounded Cape Sunium, beheld her crested helmet and pointed spear above the battlements of the city.

The works of Phidias are arranged in distinct classes,—those of mixed materials, ivory and gold, bronze and marble. He also worked in clay, wood, and plaster.

The most celebrated of all his works was his Jupiter. He was seated on a throne, which, like the statue, was of ivory and gold. He wore a crown upon his head, in imitation of a wreath of olive. In his right hand was a sceptre of curious and exquisite workmanship, on the top of which was an eagle, composed of various kinds of metals. The robe and sandals of the figure were of gold. The throne was variegated with gold and precious stones, and inlaid with ivory. Four figures of Victory were represented at the foot of the throne. Other figures stood at the feet of Jupiter, which is supposed to have been sixty feet high.

Mrs. Siddons was so overcome by viewing one of the groups of female statues by Phidias, as actually to shed tears; and Mr. West, in speaking of a horse, says, "Would not one almost suppose that some magic power, rather than a human hand, had turned the head into stone, at the moment when the horse was in all the energies of his nature?" We feel the same, when we view the young equestrian Athenians; and in observing them, we are insensibly carried on with the impression that they and their horses actually existed, and we see them at the instant when they were converted into marble. While it is the fashion to doubt the genuineness of all ancient works of art, the works of Phidias are undoubted, and stand out from all others in unrivalled and unquestioned excellence and originality.

Phidias was as remarkable for his integrity as for his skill. But he was obliged to endure the persecution of enemies and rivals, and fell at last a victim to their accusations in the fifty-sixth year of his age. Having surrendered himself as a prisoner, awaiting the trial that should prove his innocence, he died in prison, and perhaps by poison.

Pericles, Plato, Socrates, Alcibiades, and Asphexia, Protagoras, Zeno, Anaxagoras, etc., are among the renowned characters of history who were contemporaries, and many of them friends, of this great artist.

Alcamenes and Agoracritus were pupils of Phidias, and they, with Polycletus, a cotemporary, formed what is called the "canon," from which all succeeding artists borrowed their proportions. Ctesilaus was a rival artist, and to him, erroneously, it is said, has been attributed the celebrated "Dying Gladiator."

In the Boston Athenæum are to be seen the Head of Jupiter, by Phidias; the Apollo, the Venus de Medici, and other casts of the antique.

The most celebrated works of Agoracritus were the statues of two youths, the Diadumenus and the Doryphorus.

Naucides, Lysippus, Scopas, etc., were also cotemporaries with Phidias. To

Scopas was attributed the group, Niobe and her children. one of the finest studies of ancient art. He represents them as pierced by the arrows of Apollo. The originals are in the Gallery of Florence.

Winkelmann allots three epochs to sculpture. The style hard and stern; the style great and strongly marked; the style graceful and flowing. The first lasted to Phidias; the second to Praxiteles, Lysippus, and Scopas, the first of whom commenced the third epoch.

PRAXITELES was born about 364 years before Christ. The place of his birth is uncertain. Some contend that he was born at Cnidus, perhaps on account of his beautiful statue of the Venus of Cnidus. There is a copy of this Venus, drawn by Flaxman.

The youthful mind of Praxiteles was kindled by the noble works of Phidias. It has been said that art has not attained, and can not attain, any higher excellence than Praxiteles gave to it; and whether this is true or not, it is at least a sentiment highly commendatory of this ancient sculptor. But few of his works remain. The Faun, the Thespian Cupid in the Capitol, the Apollo with a lizard, command the admiration of the uninitiated as well as the scientific.

LYSIPPUS was cotemporary with Praxiteles, and was born at Sicion. He was originally a brazier. His chief works were in bronze; his Tarentine Jupiter, 60 feet high, and his twenty-one equestrian statues of Alexander's bodyguards, were held in the highest estimation. So great was his reputation, that centuries after him, an attempt to remove one of his statues from the public baths, occasioned an insurrection which made even Tiberius tremble. Of six hundred works attributed to Lysippus, not one remains.

CHARES.—The famous Colossus of Rhodes is attributed to Chares of Lindus. This immense work is too well known to require a description. But finding that the sum granted to him was utterly inadequate to complete the work, in a fit of insanity he committed suicide. The statue was completed by Laches, a fellow-countryman and a celebrated artist.

The famous group *Laocoon*, found in the baths of Titus in 1506, is supposed to have been executed during the period we have been considering, and to be the united work of the preceding artists, as also many of the antique marbles. So also is the Amazon of the Vatican, but its author is unknown. The Knife-grinder at Florence, called by the Italians, "Il Rotatore," is much admired. Silenus and the Infant Bacchus, and Hercules in Repose, by Glycon, belong in this catalogue. The celebrated Venus de Medici, in the Florence Gallery, and which is thought to have been suggested by the great Venus of Praxiteles, is represented as landing on the shores of Cythera. As early as the 16th century, it was placed in the gardens of the Medici at Rome, and was carried to Florence in 1680. Napoleon sent it to Paris. In 1815 it was returned to Italy.

During forty-five years after the death of Alexander, the schools of Lysippus and Praxiteles maintained their rank. But after their death, original works of magnitude were not produced, and, according to Pliny, sculpture lay dormant a hundred and twenty years.

The singular notions entertained by the unenlightened in reference to works of art, are well illustrated by an anecdote given by Mrs. Lee. The Etrurians highly valued a certain picture of Bacchus, and did not conceal their anxiety when the Roman soldiers, their conquerors, had converted it into a table. The Romans concluded that gold must be concealed in it, and the Roman General gave it to the keeping of a common messenger, charging him to deliver it safe, under pain of being obliged to paint *another equally good*.

The Etrurians, who properly regarded these Romans as barbarians, inhabited the countries now known as Tuscany and Florence, which still excel, not only in painting and sculpture, but also in architecture and other kindred arts.

The Augustan age, so notable in Roman history, was not the age of the fine arts. During this period, all their eminent sculptors were Greeks. It was the age of war and conquest, not of the arts. Their sculptures were obtained from conquered enemies. Augustus favored them, but he did not revive them. Tiberius, his successor, had no regard for them. Caligula collected statues from Greece, and ordered that the Jupiter of Phidias should be brought to Rome; but, as this could not be accomplished, he consoled himself by placing his own head upon one of the beautiful Grecian statues. This was decapitated for that purpose. But it was not till the reigns of Vespasian, Trajan, and Adrian, that the arts can be said to have had a home in Rome. Trajan's Column, which stood in the centre of the square of the Forum, is well known. The Head of Antinous, which was found at Tivoli, where stood the house of Adrian, is now in the Boston Athenæum. But under the reign of Commodus, the love of the arts almost totally disappeared. The Arch of Severus is a poor imitation of more ancient works.

In the eleventh century, Germany outstripped all other countries in their regard for works of art. Statues were executed at Aix-la-Chapelle, by order of Charlemagne; German artists practised in Italy, Spain, and France. Nicholas of Pisa, about 1250, introduced improvements, and formed the first school of sculpture for modern Europe. In 1350 his grandson, Andrea Pisano, established the first academy of design at Florence, and before the close of the century sculpture had become a national art.

CONSUMPTION OF FOREIGN GOODS.

The following table gives the amount of the several kinds of goods entered for consumption, at the port of New-York, in 1853, and which passed from the warehouse into consumption:

Cotton,	$27,357,550
Silk,	33,315,116
Flax,	8,446,208
Miscellaneous dry goods,	5,742,013
Total entered for consumption,	$90,530,782

SUPPLY OF COTTON.

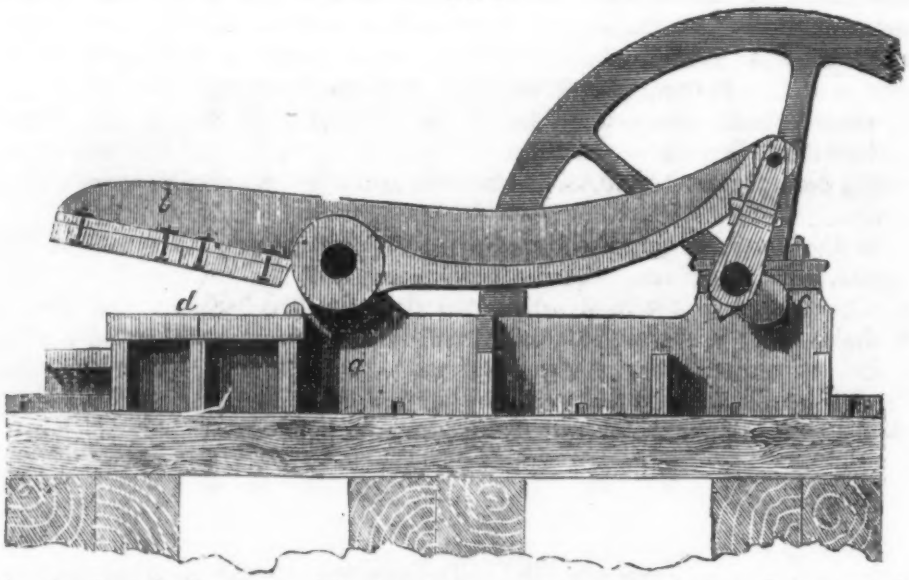
The New-York *Journal of Commerce* shows the distribution of the cotton supply for the last ten years, expressed by per centage. For 1852–3 it is as follows:

Total supply, crop and stock,	3,354,058
Great Britain,	51.78
France,	12.72
North of Europe,	5.10
Other foreign ports,	5.77
United States,	20.59
Burnt, and stock on hand,	4.04

IRON MANUFACTURE.

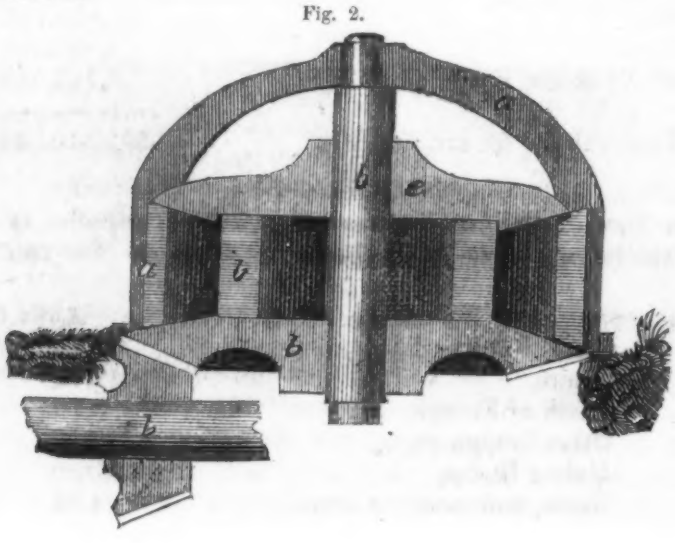
We pursue our general account of the various steps in the process of manufacturing iron from the ore. We have shown the different processes for the production of pigs and blooms. It next becomes us to show the use made of the latter. But before we go further in that direction, we will give the reader a view of another process by which the pig is converted into a bloom. This is by what are termed Squeezers. When the pig-metal is sufficiently boiled and worked in the puddling-furnace, it is rolled into a compact ball, and hastily borne, in huge pincers, to the squeezer. One form of this ma-

Fig. 1.



chine is given in figure 1. The ball being placed in its jaw at *d*, is pressed at every revolution of the wheel, by the crank on its axis, the metal being still held in the pincers, and turned as it may require. The impurities which it contains are thus worked out, and the metal becomes solid and compact, and is a "bloom."

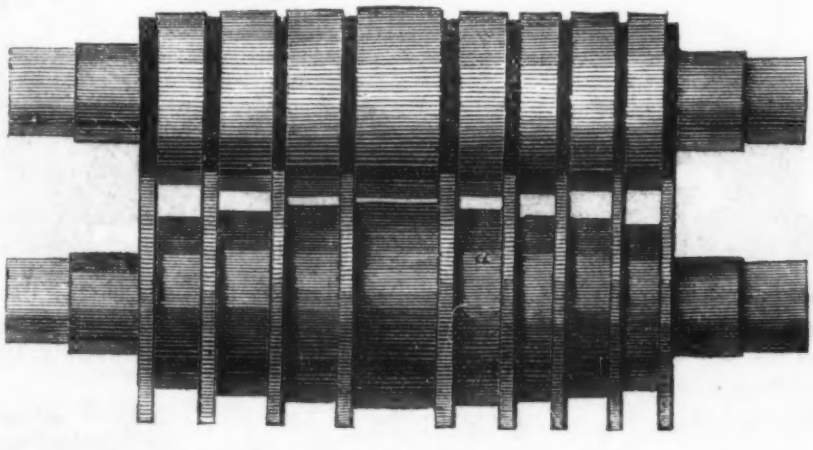
Fig. 2.



BURDON'S ROTARY SQUEEZER (fig. 2) is a more efficient machine for accomplishing this result. It is an American invention. The stationary part of this powerful engine is represented at *a a*, and consists of a cast-iron cloak, which incloses the movable parts *b b b*. An eccentric space is thus left between the main parts, in which the melted pig is formed into a bloom. The ball is inserted between *a* and *b*, and moved through nearly an entire revolution of the squeezer, and comes out on the other side of the opening a bloom. A few minutes will suffice to work off a heat of 800 lbs. This squeezer is coming into very extensive use, rapidly superseding all others.

The bloom is already in the condition of wrought iron, but in a form wholly impracticable for the use of the smith. Hence the manufacturer changes its condition in this respect, by means of ROLLERS. These are of various models and for various ends. One is called the FLAT ROLLER, and is exhibited in figure 3.

Fig. 3.



This engraving illustrates and explains itself. The rollers are about 14 inches from centre to centre. The groove marked *a* is the finishing groove, and is 4 inches wide and $\frac{3}{4}$ of an inch thick. The next groove is $1\frac{1}{8}$ inches high and about $3\frac{7}{8}$ wide. The third is $1\frac{5}{8}$ by $3\frac{3}{4}$, then $2\frac{1}{2}$ by $3\frac{5}{8}$, and the last $3\frac{1}{2}$ by $3\frac{1}{2}$. The other half of the roller may be arranged for bars of different dimensions.

Another is for RAILROAD IRON, of which a representation is given in

Fig. 4.

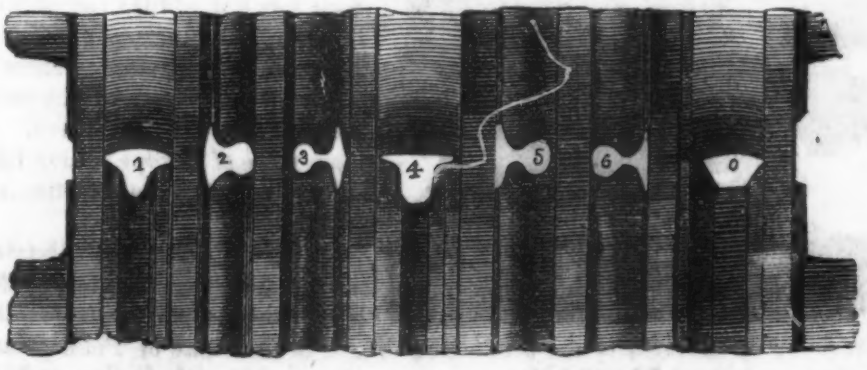


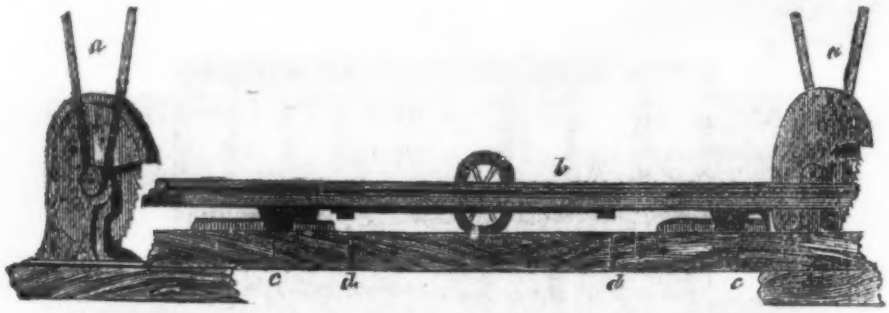
figure 4. It shows the gradual formation of the T rail from the square billet. It is first received into the left-hand groove, or No. 1, then No. 2, and so on. The first three work out both flanges to a certain extent, but leave

them imperfect; the fourth presses the top and bottom smooth, and improves the bottom flanch. Nos. 5 and 6 finish the rail.

This is very heavy work, and requires the aid of machinery. Chains are suspended from sliding pulleys, fixed over the heads of the operatives, to which huge tongs are affixed. These are guided by the workmen, who conduct them to the groove, while the hot metal is seized by the rollers and carried through them. When the rail appears on the other side, another set of men, with similar machinery, grasp it and return it through the next groove.

Having thus secured the proper shape to the railroad bar, its length and the shape of its ends require attention. Figure 5 represents a sawing apparatus, by which these changes are produced.

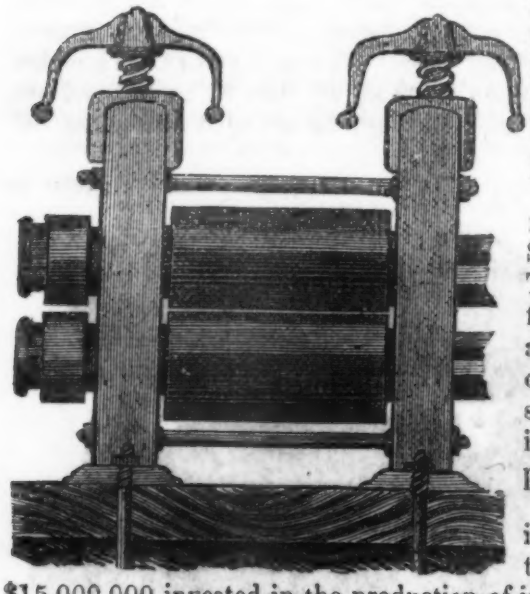
Fig. 5.



The saws are circular, and are put in motion by the belts at *a*. But one end of the rail is cut at a time; that being finished, the other end is drawn under the saw and cut in a similar manner. The rail is then straightened; after which it is ready for the market.

The next engraving represents a roller for the manufacture of sheet-iron.

Fig. 6.



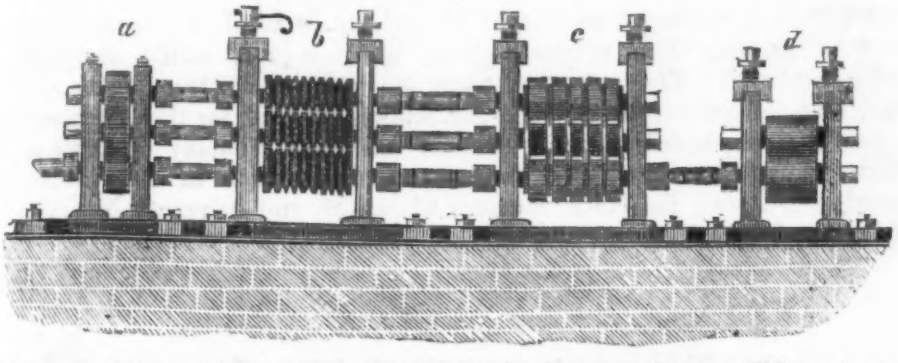
After leaving the rollers above described, if it is intended for broad sheets, it is passed through those represented in figure 6. If it is designed for small round or square bars, rollers are used like those represented in figure 7.

The iron intended for sheets must first be formed into flat bars. Such was not always the practice. The sheets, in ancient times, were flattened out by forge-hammers, and afterward smoothed by smaller hammers, on the anvil. In some parts of Europe, where labor is very cheap, this practice still prevails.

In the "*Locomotive Sketches*," it is stated "at this time, (1854,) there are probably not less than $15,000,000 invested in the production of iron in the State of Pennsylvania, exclusive of about $6,000,000 invested in rolling-mills, and similar works for the conversion of the metal into forms for use. The number of persons employed in mining the anthracite and iron ore is about 5000, in making the

charcoal about 15,000, and the number of persons dependent on this description of labor about 70,000; the number of those engaged in the conversion of pig-iron, 90,000, and the population connected with the production of

Fig. 7.



iron, 100,000, making a total of 280,000 in that one State. This estimate does not include those engaged in its transportation, sale, &c.

We are indebted for our engravings in this and the former article on this subject, to our friend, Mr. Smith, publisher of the book so often referred to.

CORRUGATED IRON PLATES.

In this invention it is claimed that rolling the iron in small curves or arches, instead of planes, gives it largely increased strength. The inventor, Mr. Richard Montgomery, thus describes his invention and various tests to which it has been put:

"The boiler-plate now in use is rolled in planes. This invention consists in the employment of corrugated plates of metal in the construction of cylindrical flues, curved fire-arches, and curved shells of boilers. The plates are rolled into curves or arches. The roll is so constructed as to leave a margin or flange on each of the four sides of the plate, for punching and riveting.

The simplicity of the invention is evident. It borrows from the science of architecture the *principle of the arch*, and impresses it upon the manufactured iron, and thus imparts to shells of iron, rolled into this new form, a strength at least ten times greater than that possessed by plates at present in use. *It is equivalent to the discovery of a new metal of increased strength.*

The 'corrugated boiler-plate' is intended to be used in the construction of all forms of boilers, flues, and locomotives. The following are some of its manifest advantages:

Various tests have been applied to the corrugated iron in New-York and elsewhere. In New-York, the test was as follows: Four strips of boiler-iron were used, one fourth of an inch thick, 7 feet 11 inches in length; *two* of them were bent in the form of an arch in the direction of their length, the remaining two strips were corrugated by passing them through the rollers of the required shape, the rise of each corrugation being one inch. The curved ribs were placed in pairs, side by side, and weighed with pig-iron. The first pair, consisting of plain iron, yielded with a pressure of 3126 lbs.; the pair of corrugated strips were loaded with 16,094 lbs., and afterward with 27,000 lbs., without any perceptible deflection. The subscriber prepared in New-

York a boiler six feet long. The flue was made of plain boiler-plate *one quarter* of an inch thick, and *nine inches* in diameter; the outer shell was made of corrugated iron *one eighth of an inch* thick, and 20 inches in diameter. Hydraulic pressure was applied to the boiler and the *flue collapsed*, without affecting the thin outer shell of corrugated metal.

In addition, it is charged that about 30 per cent. is saved in the construction of boilers with the corrugated plates, besides a great saving in space, about 8 feet in 30. The corrugated boiler also presents one third more fire-surface than the present boiler. The advantages claimed for this discovery are, greater strength, safety to life, economy of space, economy of expense, economy of fuel, less draught of boats, detection of defects in iron, greater generation of steam, durability, economy of repairs, and increased diameter of flues and boilers."

GUTTA PERCHA—ITS NATURE, USES, ETC.

Gutta Percha, the Malayan term given to a concrete juice taken from the Isonandra Gutta tree, is indigenous to all the islands of the Indian Archipelago, and especially to the Malayan Peninsula, Borneo, Ceylon, and their neighborhoods, in which are found immense forests of this tree, all yielding this product in great abundance. Its fruit contains a concrete edible oil, which is used by the natives with their food. The gutta, or juice, circulates between the bark and wood of the tree, in veins whose course is distinctly marked by black longitudinal lines. The natives were formerly in the habit of peeling the tree when they required a supply, but have been taught by experience that the juice can be obtained by cutting notches at intervals in the trunk, and thus preserve the tree for future tappings, as our maples for successive years yield their sap to the sugar manufacturers. The juice consolidates in a few minutes after it is collected, when it is formed by hand into compact oblong masses of from seven to twelve or eighteen inches in length, by four to six inches in thickness, and these, when properly dried, are what is known as the Gutta Percha of commerce.

It is only ten years since the knowledge of the existence of this ductile secretion dawned upon the world. Dr. Montgomerie, an assistant-surgeon at Singapore, observed in the possession of a native the handle of a wood-chopper, of such singular material that it awakened his attention, and, on inquiry and examination, he found it to have been made of the juice of this strange tree, becoming plastic when dipped in hot water, and when cold resuming its original stiffness and rigidity. Within these few years, the exudations of these dense forests have assumed, more especially in England, innumerable forms.

The gutta percha of commerce is of a light-brown color, exhibiting a fibrous appearance, much like the inner coating of the white-oak bark, and is without elasticity. When purified of its woody and earthy substance, it becomes hard, like horn, and is extremely tenacious; indeed its tenacity is wonderful.

The strength of tubes of this material is so great that no visible effect was produced upon them by the proving-pump of the Water Company of the city of Stirling, in Scotland, which gives more pressure than any other pump in Great Britain—a pressure that would scatter the rivets of leather-hose in all directions.

The application of heat to the crude material makes it soft and plastic, and in a temperature of about two hundred degrees it becomes ductile, when it can be moulded into any desired shape, which it retains when cool. It can be dissolved by sulphuret of carbon, or chloroform, or if immersed for a time in spirits of turpentine. It is a repellant of, and completely unaffected by, cold water, and, unlike India rubber, it resists the action of oil and other fatty substances without injury. It is a non-conductor of electricity; is proof against alkalies and acids, being only affected by the sulphuric and nitric, in a highly concentrated state, while the most powerful acetic, hydrofluoric, or muriatic acids, or chlorine, have no perceptible effect upon its structure or capabilities. This gum has qualities entirely different from India rubber. It can not be worn out. It can be melted and re-melted, and repeatedly re-moulded without changing its properties for manufacture, or losing its virtue. It is lighter than rubber, of finer grain, and possesses certain repellant properties unknown to that material; and is extremely tough. It disregards frost, and displays remarkable acoustic qualities.

In its crude state, gutta percha has no resemblance whatever to India rubber in appearance, nor are its chemical or mechanical properties the same, nor does the tree from which it is taken belong to the same family, or grow in the same latitude or soil; yet, from the fact that it can be dissolved, and wrought into water-proof wares, many, not informed on the subject, have inclined to the belief that the two materials are substantially the same, and that a process for the manufacture of one would apply equally well to the manufacture of the other. But nothing could be more erroneous, as may be seen by the following comparisons:

Gutta percha, when immersed in boiling water, contracts considerably in bulk. India rubber, when immersed in boiling water, expands very materially, and increases in bulk.

Gutta-percha juice is of a dark-brown color, and consolidates in a few moments after exuding from the tree, when it becomes about as hard as wood. India-rubber sap is perfectly white, and of the consistency of thick cream. When it coagulates, it gives from four to six parts water out of ten. It may be kept like milk, and is frequently drank by the natives.

Gutta percha, first treated with water, alcohol, and then dissolved with spirits of turpentine and precipitated, yields a substance consistent with the common properties of gutta percha. India rubber, similarly treated, results in a substance resembling in appearance the gum arabic.

Gutta percha, by distillation, yields 57 2-3 per cent. of volatile matter. India rubber, by the same process, yields 85 3-4 per cent.

Gutta percha, in its crude state, or in combination with other materials, may be heated and re-heated to the consistency of thin paste, without injury to its future manufacture. India rubber, if but once treated in the same manner, will be destroyed and unfit for future use.

Gutta percha is not decomposed by fatty substance; indeed, one application of it is for oil vessels. India rubber is soon decomposed by coming in contact with fatty substance, as is well known.

Gutta percha is a non-conductor of cold, heat, and electricity, and, in its natural state, is non-elastic, and with little or no flexibility. India rubber, on the contrary, is a conductor of heat, cold, and electricity, and by nature highly elastic and flexible.

The specific gravity of gutta percha is much less than that of India rubber—in the proportion of one hundred to one hundred and fifty—and it is much finer in quality, and a far better conductor of sound.

Fabrics wrought of India rubber require a separate varnish to give them polish. But the gutta percha possesses a nature of inherent polish, equal in lustre to the varnish, and permanent.

From its first appearance in Europe up to the present time, all writers upon the subject have spoken of gutta percha as certain to become a most important article in the mechanic art; but its manufacture everywhere presented the same objections that existed from the beginning, namely, non-elasticity and rigidity, variableness and extreme sensibility to heat and cold—so that, for a great number of articles, the trade has diminished rather than increased.

Numerous attempts were made, up to the year 1850, to obviate the objections to gutta-percha goods, as then manufactured. Eminent chemists, through several years, toiled in vain for the secret which they believed to exist, which would endow gutta percha with permanent elastic qualities. For it was discovered that if this hidden secret could be unlocked, and the art discovered of superadding pliability, in the strange capabilities this wonderful gum already possessed, the already extensive range of its uses would be indefinitely enlarged. But the attempts were signal failures.

A final attempt, however, based upon a series of novel experiments, wholly of original character, by Mr. William Rider, of the firm of Rider & Brothers, of this city, and brothers Emory and John Rider, resulted in the astounding discovery of a process of vulcanization, by which gutta percha was made permanently elastic and flexible, like India rubber, contrary to the conclusion of all other experiments, in this country and Europe.

No time was lost in making application for letters patent, which were granted.

Under this discovery, gutta percha, which before was a fibrous, non-elastic and horny material, and affected by the changes of climate, is converted into pliable and elastic fabrics, which remain the same under all changes of climate, is not injured by acids or fatty substances, is free from offensive smell, and, unlike India rubber, does not decompose and get sticky. With such advantages, this invention must prove one of vast importance in the arts.

SELF-MADE MEN.

It is one of the most pleasing features of the genius of our government, that it opens a wide door for individual progress in the various professions and occupations in which our vast population are engaged. The man who wills it, has it in his power to arrive at almost any eminence, whether in professional life, or in those pursuits in which the physical prevail over the mental energies. Hence it is that our nation has had and will continue to have so many self-made men whose career affords strong motives of encouragement to American youth who are rapidly crowding upon the stage of action. Every populous town in our country can point to some one of its number who has risen from obscurity to a position that now makes his name familiar with every public enterprise connected with the growth of his town, village, or city. Boston has had its Billy Gray, New-York its John Jacob Astor, and Philadelphia its Stephen Girard—men who began the world with nothing but their native energies, yet whose names will long be connected with these

cities from the institutions to which they gave rise while living, and with which their names will be associated down to the latest period of time.

We have been led to these remarks from a description, in one of the popular Philadelphia magazines, of an establishment which is attracting much attention both in that city and elsewhere, whose proprietor, according to the journal in question, began life with comparatively nothing, but whose establishment now exceeds any thing of the kind in that city, and who bids fair, at no distant day, to be ranked as one of the most successful business men of the country.

Charles Oakford, according to the authority already quoted, commenced the hatting-business in Philadelphia twenty-five years since, with a capital of five dollars. His stock of course was limited, his store small, but he devoted himself untiringly to his business, and many times was seen trundling his own wheelbarrow through the streets, a feat which many young men at the present day would hardly be willing to perform. A few years found his place too small for him, and he moved; and in a few years longer he moved again, and again, and yet again, until now he occupies one of the largest and most princely establishments in Chestnut street. His present store is the middle one of three, planned by himself, and built with the fruits of his own industry, after successfully toiling a quarter of a century. Its number is 158, and it attracts the attention of many a passer-by, from the magnificence and splendor of its finish, no less than from the excellent hats, for the manufacture of which Oakford has become so deservedly renowned.

Charles Oakford is an example, in point, of the principle which we laid down in the commencement of this article. His career, like that of many other self-made men, is full of encouragement to the energetic and industrious youth of our country. Success will surely attend him who labors for it, rewarding him abundantly for his enterprise and perseverance.

BABY-SHOW IN GEORGIA.—The following are among the premiums to be awarded at the Southern Central Agricultural Association, for the "handsomest and finest" specimen of babies. We give this timely notice, that those who may find themselves able to comply with the conditions above annexed, may get ready for this great show of infantile humanity which is to come off next fall:

First Premium.—Silver pitcher $50, for the handsomest and finest babe two years old.

Second Premium.—Silver pitcher, $25, for the handsomest and finest babe one year old.

Third Premium.—Silver goblet, $10, for the handsomest and finest babe six months old.

The children to be clothed in domestic fabrics; the premiums to be awarded under the direction of the executive committee.

We must confess that this and one or two other similar notices, look to us like going beyond the legitimate limits of an agricultural society. Do they expect to improve *the breed?*

If these societies will give a premium for the best-disciplined family, for the daughter best instructed in the duties of the head of a family, a boy best imbued with good principles and devoted to good practices—if they will by premiums or HONORABLE MENTION, commend instances of unwavering filial obedience, or of PARENTAL FIDELITY, the nation may have substantial cause to rejoice. It might be a *notice* of an early dismissal of thousands of policemen and other peace-officers.

EDITORS' JOTTINGS AND MECHANICAL RECORD.

A MONUMENT TO JOHN S. SKINNER, ESQ.

A DONATION TO HIS WIDOW.

A SPECIAL APPEAL TO OUR READERS.—The attentive reader of *The Plough, the Loom, and the Anvil*, has observed occasional paragraphs on the subject which heads this article. Our last number contained the action of the United States Agricultural Society in relation to the matter, including the resolution in which the object was recommended to the favorable consideration of the agricultural community throughout the United States. An event of recent occurrence has induced the friends of the measure to couple with the movement a donation to Mrs. Skinner. The particular circumstance which led to this measure, is best stated in the following extract from an appeal issued in behalf of the object, by a committee whom we will presently introduce to our readers:

"Our deceased friend had but few of this world's goods in possession at the time of his death, and those who had been dependent upon him during his sojourn upon earth were, in a measure, thrown upon the charities of a cold world. His estimable widow found a residence in the family of her beloved mother, whose decease, on the 17th of February last, at the advanced age of eighty-four years, has deprived Mrs. Skinner of a home, and has entirely frustrated all her plans for the future. A proposition was before the Maryland State Agricultural Society, soon after the decease of Col. Skinner, to raise five thousand dollars as a donation to Mrs. Skinner, which was received with much favor, but was never successfully prosecuted. It has been earnestly recommended that the raising of this amount for Mrs. Skinner, be united with the one thousand proposed to be raised for the monument, especially since the death of Mrs. Bland, the mother of Mrs. Skinner, has left Mrs. S. in circumstances of destitution."

It will be perceived that the whole amount proposed to be raised for the two objects is six thousand dollars, to wit: one thousand for the block to be placed in the National Washington Monument, and five thousand as a donation to Mrs. Skinner.

The following gentlemen are the acting committee for bringing these objects before the American public: Henry C. Carey, Esq., Chairman; the venerable GEO. WASHINGTON PARK CUSTIS, Hon. Marshall P. Wilder, President of the U. S. Agricultural Society; Hon. James M. Porter, President of the Corporate Council of Easton, Pa.; Dr. M. W. Phillips, a distinguished planter and farmer in Edwards, Miss.; Lewis G. Morris, Esq., ex-President of the N. Y. State Agricultural Society; Roswell C. Colt, Esq., of Paterson, N. J., a distinguished importer and breeder of stock; Hon. Allen Trimble, ex-Governor of Ohio; Dr. Alfred Langdon Elwyn, President of the Pennsylvania Agricul-

tural Society; Peter A. Browne, LL.D., of Philadelphia; Hon. W. M. Meredith, late Secretary of the Treasury; C. M. Saxton, Esq., the extensive Agricultural book-publisher of New-York; G. Blight Browne, Esq., ex-President of the Montgomery County (Pa.) Agricultural Society; Benj. Perley Poore, Esq., of the Indian-Hill farm, and member of the Ex. Com. of the U. S. Agr. Soc.; J. D. B. De Bow, Esq., of the Census Office, Washington, and Editor of De Bow's Review; David S. Brown, Esq., merchant, and President of the Philadelphia Board of Trade; Hon. John Perkins, Jr., Member of Congress from Louisiana; Saml. Sands, Esq., Editor of the American Farmer, and Secretary of the Maryland State Agricultural Society; D. Jay Browne, Esq., author of the American Muck Book, and Head of the Agricultural Department of the Patent Office, Washington; Aaron Clement, Esq., agent for the sale of stock, Philadelphia; Hon. A. G. Brown, ex-Governor of Mississippi, and Senator from that State; David Landreth, Esq., proprietor of the extensive farm and garden-seed store, Philadelphia; H. D. C. Wright, Esq., merchant of Baltimore; Major John Jones, of Delaware, member of the Executive Committee of the U. S. Agricultural Society; Dr. J. W. Thomson, ex-President, and Chauncey P. Holcomb, Esq., President of the Delaware State Agricultural Society.

In an appeal recently issued in behalf of these objects, the committee use the following language:

"The committee are anxious that you should act as promptly as possible in this matter, as they wish to place the block in the hands of an artisan as soon as they can be assured of the necessary funds to warrant them in giving the order. The work on the National Monument at Washington, which has been suspended during the cold weather, is now resumed. The committee earnestly desire that the block to the memory of our deceased friend may have a conspicuous position in that stupendous pile, that the millions who shall visit it in ages to come may be reminded of JOHN STUART SKINNER, the distinguished friend and patron of the Agricultural, Manufacturing, and Mechanic Arts in America. They confidently hope that you, dear sir, will not only be liberal, but prompt, in responding to this appeal. Shall these objects be accomplished? Shall a block, which shall perpetuate the memory of a great, because a useful man, be placed in the Washington National Monument, and the widow's heart be made to rejoice in the receipt of a donation which shall relieve her from temporal anxiety the residue of her days? The committee are unwilling to believe that objects so worthy, and which commend themselves so earnestly to every feeling heart, shall be suffered to fail for want of the very small amount which they ask each individual to contribute. They make this appeal to every planter, farmer, merchant, manufacturer, mechanic, artisan, horticulturist, and professional man; for John S. Skinner was the friend and patron of all these promoters of our country's prosperity and greatness. It is expected that the personal friends of the deceased will exert themselves in effecting the objects contemplated by the committee."

The very small amount which they ask each individual to contribute, is the price of one year's subscription to *The Plough, the Loom, and the Anvil*, for which the donor shall receive that work one year from the commencement of the volume beginning with the July number, and containing a portrait of Mr. Skinner, engraved from a daguerreotype taken a few days before his death, with a Biographical Sketch, written by Benjamin Perley Poore, Esq., from materials furnished by Mr. Skinner himself a few days before the close of his eventful life. The number for July will contain the Portrait and Sketch, and the number for June, 1855, being the last number of the volume, will contain an engraving of the Monument, the inscription, names, and post-office address of donors, final report of the committee, and every thing of interest connected with the movement.

The committee have made an arrangement with the publisher, by which any person not now a subscriber, who contributes the price of one year's subscription to *The Plough, the Loom, and the Anvil*, may, if he request it, receive that work one year from July next, while one half thus contributed goes to the objects contemplated by the committee. They thus state their reasons for this arrangement:

1. Every donor, by this arrangement, receives the full value of the money contributed, in the monthly journal, which will be sent to his address one year from July, 1854, making a volume of the choicest agricultural, mechanical, and manufacturing reading matter, of 768 pages.

2. This arrangement secures to each donor a life-like portrait and biographical sketch of Col. Skinner, which every one, it is presumed, would be glad to possess.

It will be perceived that six thousand subscribers on the foregoing plan, would give the committee the six thousand dollars desired for the monument and donation to Mrs. Skinner, while each subscriber will receive back the full value of his subscription in the yearly volume of *The Plough, the Loom, and the Anvil.* Thus will each donor aid in the successful accomplishment of the praiseworthy objects undertaken by the committee, and at the same time receive a full equivalent for the money he contributes.

We believe our readers have it in their power to raise, by this means, the full amount of money required by the committee for the monument and donation to Mrs. Skinner. Take the journal to your neighbor who is a non-subscriber, tell him that by contributing the price of one year' subscription, he aids in rearing a monument to a useful man, makes the widow's heart rejoice, and secures to himself a yearly volume of 768 pages of choice reading matter.

The committee have desired the publisher to act as their agent in the movement, and thus announce the subject in their published appeal:

"The committee request that letters and donations in behalf of this object may be directed to MYRON FINCH, Esq., Office of *The Plough, the Loom, and the Anvil*, No. 9 Spruce street, New-York, whom they have constituted their agent for that purpose. The pages of that journal will contain statements, from time to time, of the progress of the work, in addition to the full account which is to be published in the last number of the volume, beginning in July next, and which is to be sent to each person contributing towards the object."

We confess to a feeling of pride in our desire to see these objects accomplished. We should feel flattered, as the successor of Col. Skinner, if the whole amount required could be raised by the present subscribers to *The Plough, the Loom, and the Anvil.* And we repeat it, this could easily be done, if every subscriber would take a lively personal interest in the subject, and send *at least* one name, with a year's subscription, one half of which is to aid the committee in the furtherance of these objects. Will each one of our subscribers devote an evening, a half day, or a whole day if need be, in behalf of these measures? Remember, it is for the widow that we make this appeal, and the widow of one who has done more than any man living to help forward those industrial pursuits in which you are all engaged. Let not this appeal be made in vain. While the subject is fresh in your minds, seek some one who will contribute the requisite amount, and forward it for that purpose; or failing in this, contribute the money yourselves, and let the journal be sent to some friend. But act promptly, without any delay—act decidedly and energetically—act generously, and you shall have the blessing of the widow and the widow's God! Need we say more to insure a hearty response to this appeal?

DEATH OF RICHARD C. THOMSON.

IT is with no ordinary feelings of sorrow that we record the death of one well known to our readers as the Philadelphia publisher of *The Plough, the Loom, and the Anvil*, to wit: RICHARD C. THOMSON, Esq. Mr. Thompson was born in the city of Philadelphia, and at the time of his death was about thirty-two years of age. His father was a druggist, in Arch street, below Second, and Mr. Thomson's early years were passed in his father's store. He subsequently entered the book-store of Carey & Hart, and became perfectly conversant with the book-trade in all its various departments.

Soon after the commencement of *The Plough, the Loom, and the Anvil*, he entered the employment of Col. Skinner, and at his decease became his administrator. It was in this capacity that the writer first became acquainted with him, in June, 1851, in negotiating the purchase of that work. After the sale was effected, Mr. Thomson became associated with Henry Carey Baird, in the book-trade, but continued to conduct the agency of *The Plough, the Loom, and the Anvil*, at Mr. Baird's store in Philadelphia. His avocation caused him to make frequent visits to New-York, and what commenced with the writer as a business acquaintance, soon ripened into the most intimate friendship.

His last visit to New-York was on the 8th and 9th days of March. The writer parted with him at our office in the afternoon of the 9th, he purposing to return to Philadelphia in the evening train. He was too late, however, for the train, and returning, took lodgings at a hotel until morning; and it was there, as he informed the writer, that he took a cold which was the immediate cause of his death. He said the sheets of his bed were *damp*, and he soon found himself chilled through and through. in which condition he remained some time before going to sleep.

On returning home the next day, he found himself suffering with a severe attack of the asthma, but, unwilling to yield to the disease, he continued in the store until Friday, the 17th of the month. The writer saw him at his house on Wednesday, the 22d, at which time he stated the origin of his disease, attributing it to the dampness of the sheets at his hotel, as already stated. There was no day between the time of his taking to the house and his death, that he was not able to be up and post his books, which he had taken home with him for that purpose. The writer was in Philadelphia at the time, but the condition of Mr. Thomson was so comfortable, that he did not deem it advisable to call on him again, before being informed of his death.

On Wednesday evening, the 29th, he was apparently much easier, and his immediate friends felt not the slightest uneasiness in relation to his recovery. Early on the morning of Thursday, the 30th, his symptoms became more alarming, and his disease continued to increase in malignity until five o'clock, when he ceased to breathe.

Our friend was constitutionally predisposed for such a disease as the one that finally removed him from earth. He had long had a consumptive cough, and it was the opinion of his friends that he would finally die of that disease. There was nothing in his case, however, before taking the cold, which indicated that he might not live many years. His cough was not unusually severe at the time, and his general health was good. It was the asthma, in its most malignant form, that was the immediate cause of his death.

Mr. Thomson has left a wife, and a child two years old, a mother and a sister, beside a numerous circle of friends, to mourn his loss. In all the relations of life he sustained an untarnished reputation, being an affectionate friend, a kind husband, father, brother, and son. His death has caused a void to be felt in many a heart, which it will not be easy to fill. To the writer he was like a brother, warm in his attachments, and kind and obliging to a fault. He has left behind him the savor of a good name, derived from the practice of those virtues which, if cherished by the living, would deprive the dying hour of many a sad reflection, and rob death of its terrors. His memory will long be cherished by many who will mourn his loss, and by none more fondly nor more sincerely than by him who has penned this hasty tribute to his excellence and worth.

M. F.

Crystal Palace.—This great exhibition has been closed for a few days to open on or about the first of May, with a new inauguration and with large invoices of goods just arrived from Europe, as well as others from this country. A season of great popular favor now awaits this great industrial institution. We can not doubt it. Make your calculations to see for yourself.

THE CRYSTAL PALACE.—American enterprise is about to acquire new laurels under the reformed management of this great Exhibition. The former board did as well as they could in the entire absence of experience, but the show promises to be far better for the coming season than it has yet been. The nation has already been honored, though at the cost of individual stockholders. We trust that all will now receive benefit, corresponding with their interest in the exhibition. We give below the principal part of the letter addressed by Mr. Barnum to the directors. It will be read with interest by every man, woman, and child in the country, who takes pleasure in exhibitions of the beautiful, or in the prosperity of the country in these numerous departments of art.

After speaking of the successful progress of the effort to raise $100,000, in its behalf, by the sale of tickets, &c., he proceeds thus:

"I have directed, therefore, that the Exhibition, in view of its new character, be temporarily closed on Saturday evening the 15th inst., to reöpen with a popular reïnauguration and appropriate ceremonies on the 4TH OF MAY NEXT, the details of which will be furnished by the Committee of Arrangements, Messrs. Horace Greeley, Charles Butler, John H. White, Edward Haight, and P. T. Barnum.

The interval mentioned will afford a much needed opportunity for the reception and arrangement of a world of rare and beautiful articles that have recently come consigned to us from Europe, as well as some exceedingly interesting American and foreign specimens in machinery, manufacture, and general art, that have awaited our determination to place the Crystal Palace among the imperishable enterprises of the age and the nation.

The Dutch Government has just contributed a large and choice variety of singularly unique articles of luxury and use from Japan. They number about one thousand, and can not but prove wonderfully attractive, as tending to throw much light upon the peculiar habits of a reserved and extraordinary people.

Our Foreign Agent, Mr. Charles Buschek, advises us, that in consequence of the unsettled state of the European Continent, the number of costly paintings and valuable *chefs d'œuvres* in sculpture ready to be placed at our disposal is unusually great, and will be forwarded without delay now that every apprehension that the Exhibition will be a transitory speculation has been disposed of. His report in relation to the more novel and elegant manufactures of Europe is equally gratifying; and I may add that arrangements are being perfected for the purchase of a collection of admirable copies of all the celebrated statues of the Antiques—a collection that, in itself, will present the highest claim to the popular taste and attention.

A perfectly correct and handsome model of Venice, covering about one thousand square feet, and exhibiting every minute detail of that beautiful city, in carved wood, from the reality itself, will also be added.

Several eminent Horticulturists have manifested a desire to embellish the Crystal Palace with a profuse variety of uncommon plants and flowers. A number of musical societies and bands have also intimated a wish to add, in turn, their attractions to the popularity of the Exhibition. With all these, suitable arrangements will be effected.

The Committee, (consisting of Messrs. Mortimer Livingston, Watts Sherman, Wm. Whettan, Wm. B. Dinsmore, and Charles H. Haswell,) appointed to solicit our own citizens for fine-art contributions, find that but one feeling pervades all classes of the people in reference to our undertaking. All seem to manifest the most earnest interest in its success, and all are anxious for an opportunity to aid us in its popularization. We may confidently depend, therefore, upon a very extensive selection of gems of art from private and domestic sources, worth in the aggregate several hundred thousand dollars, and in point of intrinsic merit approached by no similar exhibition on this continent.

The amplest facilities will be extended to exhibitors, among which will be the important right to affix the price to any article of which they may wish to dispose, to direct visitors where duplicates may be obtained, and remove their contributions, at any time, by giving only one week's notice in advance.

The machinery department will be much fuller and more effective than hitherto.

There will be operating specimens of nearly every great invention, and in some instances the entire process of manufacturing various fabrics will be exhibited.

As steam-power and space will be gratuitously furnished for the most interesting processes in art and industry, and as inventors and exhibitors will be permitted, under certain judicious regulations, to run the machinery for their own benefit, this branch of the Exhibition is expected to become especially interesting.

Allow me to recommend, in this connection, that the Board of Directors announce at an early day, its determination to award medals and other marks of merit to those who may be, by competent judges, pronounced worthy of the distinction. The medals and diplomas awarded for 1853, will be ready for delivery in the beginning of May. Under the new organization, every article will be classified to facilitate inspection. Those of the same kind, as far as practicable, will all be grouped together, no matter from what quarter of the world contributed. The visitor may thus at a single glance, institute a just comparison between the different developments of taste and skill in different countries. A novel and useful plan of rearrangement has been decided upon that will nearly double the space previously appropriated to exhibitors throughout the entire building. We need not hesitate to publish, therefore, our ability to find room for any thing pleasing or useful that may be intrusted to us, and to invite every man and woman in the world to originate something for this concentration of the "Industry of all Nations," that may redound to their credit and benefit our common humanity.

Among the accommodations arranged for visitors to the Crystal Palace, will be found two telegraph-offices, letter-boxes for the mails, express-boxes, a police-station, an office for property lost and found, and two spacious refreshment saloons, where every thing will be provided of unexceptionable quality at unexceptionable prices.

Arrangements have been completed with some, and are in progress with other steamboat and railroad companies connecting this city with various portions of the Union, agreeably to which visitors will be conveyed to the Crystal Palace from the remotest spot, at greatly reduced rates of travel. Nothing else shall remain undone, on my part, to conduct this magnificent enterprise with that liberality which is due to the public, and that energy and economy which are due to the interests of the Association."

Dr. Roehrig, of whom we made mention last month, has shown us testimonials from some of the greatest oculists in Europe. For a time he was first assistant of Dr. Deval, the most eminent oculist in Paris. His name also occurs with commendation in "*Annales d'Oculistique*, vol. 17, 1847. We have also witnessed his very successful management of a case of hemiope, or half-sight—where the upper half of any object was entirely invisible. We have also known his successful treatment of a case, in which almost total blindness had been occasioned by small-pox. He rarely uses instruments, and only when utterly indispensable.

American Gas Company.—The demand for the machines of this company are greater than their ability to supply them. They have contrived a portable gas-light.

New-England Wine.—We find that in many localities in Connecticut, wine of excellent quality has been made from the native grape within a few years, on a small scale, but in sufficient quantities to test the question, whether good wine can be made from the native grape of this State. In every instance a superior article has been produced. A gentleman of Andover made two barrels a few years since, and the physicians in his neighborhood ordered it to be used in sickness, as a much better article than the imported. He readily sold it for $2.50 a gallon. Two gentlemen of this city, each made a barrel last fall, from grapes purchased at $1 a bushel in the market. Six or eight bushels will make a barrel. We find on our desk a bottle from Mr. A. G. Graham, of New-Briton, and suppose from the word left with it, that it is from the native grape. We are satisfied that wine can be produced in Connecticut in large quantities, and at a great profit to the producer.—*Hartford Times.*

More Imported Stock.—We learn that S. W. Jewett, of Middlebury, Vt., has lately returned from Europe, where he has been spending the winter, with more French sheep, Suffolk swine, of Prince Albert's stock, a large collection of fowls, comprising Dorking, Spanish, and Normandy breeds. He also brought three varieties of the basket-willow.

The Hog Trade.—The Cincinnati *Price Current* publishes its final report of the hogs packed in the West, showing a net increase in the number of three hundred and thirty-three thousand, being equal to fifteen per cent over last year. The report embraces two hundred and sixty points, and is the fullest ever published.

A Happy Editor.—The editor of the *Ohio Cultivator*—fortunate man!—is so happy as to be able—with a good conscience of course—to indite and print the following:

Acknowledgements.—"We have the best set of subscribers in the world, so many of them are willing to act as a committee of one to increase our list. The late response to our friendly hint has laid us under renewed obligation, and we will not trouble you again in that way till next December; meanwhile we are willing to have it understood that we are *still taking*!"

If we could say the same of ours, how happy we should be! But we are not so fortunate. We would add the promise of a *gift premium* for all such, and even then, we scarcely dare hope. Friends, what say you?

The Little Miami Railroad is said to be one of the most successful roads in the country. It has divided 10 per cent and has earned 14, with a fair prospect of equal success hereafter—the result not of peculiar facilities, but of judicious management.

National Poultry Show.—An official statement informs us that at the late Poultry Show, at Barnum's Museum, there were 215 exhibitors, 700 coops, and 4000 fowls. The number of visitors was 30,000. It is pronounced the best exhibition ever made in this country. Another is proposed some time next autumn, perhaps in October.

Ohio and Mississippi Railroad.—The opening of this road from Cincinnati to Aurora was celebrated on the 4th of April. 1200 guests from the city were conveyed by three trains, and partook of a grand banquet at Aurora.

Horses.—The Middlebury (Vt.) *Register* states that Messrs. Douglass, of Cornwall, have sold their chestnut horse, by "Black Hawk," to parties in Lockport, N. Y., for $2600. We also learn that S. G. Foot, of Cornwall, has lately sold a horse of the same stock for $2000, to come to Ohio. Who has got him?

L. G. Morris, of Fordham, N. Y., has purchased the celebrated race-horse "Monarch," of Col. Wade Hampton, of South Carolina.

How to Treat your Boots and Shoes when Partially Burned.—On one of the coldest days of the present month, I pulled off my boots and set them close to a stove which was very hot. The room was filled with a smell as of something burning. Turning round, I saw my boots smoking at a great rate. I seized them and immediately besmeared them with soft soap, much of which, owing to their highly heated condition, quickly disappeared in the leather. When the boots became cold, the leather was soft and pliable; and now, after several days of subsequent wear, they exhibit no marks of having been burned.

We have some knowledge of the above in our experience, and commend it as worthy of attention.

Shower-Bath.—Daniel P. Baldwin, of San Francisco, Cal., has invented a form of shower-baths, which consist in employing two revolving, trumpet-shaped shower-baths connected together by a collar, in combination with a passage in the horizontal end of the main supply-pipe; one serving, when fixed in the proper position, to throw the water upward, so that it shall descend in the form of spray, while the other may be so placed as to direct the stream of water against any portion of the body. Either warm or cold water, or both, may be supplied to the sprinklers.

ONE-PRICE CLOTHING STORE IN PHILADELPHIA.—Lippincott & Co., at the red store, south-east corner of Fourth and Market streets, Philadelphia, have a very large assortment of ready-made clothing, both for men and boys, of a superior quality and at low prices. They have adopted the one-price system, which they find to work well, as they sell much lower than other establishments. We purchased a suit from their ample stock, and can bear testimony to the cheapness of the goods, and the excellence of their workmanship. Persons visiting our sister city, in want of clothing, can not fail to be satisfied as regards price, quality, and an extensive assortment from which to select, at the one-price store of Lippincott & Co.

POWERFUL LOCOMOTIVE.—The motive power of the Baltimore and Ohio Railroad Company has been improved and rendered more efficient by the completion of one of those first-class, powerful, coal-burning passenger-engines. It is designed for the heaviest of the mountain grades, commencing at Piedmont, 307 miles from Baltimore, and running about sixty miles near Three Forks, the junction of the Parkersburg road. The engine has ten wheels, six of which are drivers, and a truck of four wheels. The drivers are 50 inches in diameter, and the trucks 30. The cylinders measure 19 inches in diameter, with 20 inches stroke of piston. The cylinder part of the boiler is 48 inches diameter and 14 feet long. The drivers are connected, and have a weight of 45,000 lbs., equally distributed between them by means of levers and springs. The whole weight of the engine in running order is 60,000 lbs., or 30 tons, and the entire length from back of foot-board, to point of fender in front, is 28 feet. It is supplied with a cut-off, for working steam expansively. This engine is intended to draw five passenger cars up the heavy grades at a speed of twenty miles per hour; is known as No. 203, and was designed by, and built under the direction of, Mr. Hays, of the Company's foundry.

NEW BOOKS.

FAMILIAR SKETCHES OF SCULPTURE AND SCULPTORS. By the author of "Three Experiments in Living," "Sketches of the Lives of the Old Painters," &c. Boston: Crosby, Nichols & Co. 2 vols. 1854.

THESE volumes are exactly what they should be. The learned authoress has shown great tact in selecting proper topics of remark, and in treating the several characters she describes. We know of nothing so desirable on these subjects for the general reader. Her style is finished, while it is graceful and familiar. She deserves a high rank among American writers.

OUTLINES OF THE GEOLOGY OF THE GLOBE, AND OF THE UNITED STATES IN PARTICULAR, with two geological maps and sketches of characteristic American fossils. By EDWARD HITCHCOCK, D.D., LL.D. Second edition. Boston: Phillips, Sampson & Co. 1854.

THIS is a book much needed. It fills a gap which has long remained a blank. We need not say it is done by one admirably qualified, and in a manner worthy of the author. It is a condensed epitome, to refresh the memory of him who is well read in the subject, and to give a bird's-eye view, and yet a comprehensive one, to him who can devote but little attention to the subject. The maps are well designed and well executed.

THE RELIGION OF GEOLOGY AND ITS CONNECTED SCIENCES. By EDWARD HITCHCOCK, D.D., LL.D. Eighth thousand. Boston: Phillips, Sampson & Co. 1854.

THE first point of interest which attracts attention in opening this volume, is its dedication to his wife, a lady whose illustrations of his Report on the Geology of Massachusetts added so much to the interest of the work. Without sentimentalism, it is affectionate and respectful. The work itself has been written and been before the public for several years, but has received from time to time such "additions and alterations" as the many discoveries in the science meanwhile have suggested. They

are the convictions of his mind, deliberately formed and thoroughly examined. The work embodies fourteen lectures, as follows: Revelation illustrated by Science; The Epoch of the Earth's Creation Unrevealed; Death a Universal Law of Organic Beings on this Globe from the Beginning; The Noackian Deluge Compared with the Geological Deluges; The World's Supposed Eternity; Geological Proofs of the Divine Benevolence; Divine Benevolence as Exhibited in a Fallen World; Unity of the Divine Plan and Operation in all Ages of the World's History; The Hypothesis of Creation by Law; Special and Miraculous Providence; The Future Condition and Density of the Earth; The Telegraphic System of the Universe; The Vast Plans of Jehovah; Scientific Truth, rightly applied, is Religious Truth. These topics, among the most important that can be discussed, are illustrated with great ability.

De Bow's Review, Industrial Resources, etc.—The April number of this very elaborate monthly is uncommonly rich in its contents. Mr. De Bow deserves the patronage of the entire community. He has an able corps of contributors, and he gives us a monthly treat not inferior to the best of the kind ever published in this country. It is "primarily adapted to the Southern and Western States," but is full of interest to all. We have often commended this work, and every month but confirms our high opinion of it. May his shadow never be less!

Putnam's Monthly.—Some men can laugh at competition, and even rejoice to see strong men labor to secure an advantage over them. Putnam is one of these. His corps of racy writers moving along, *in solid column*, under the lead of equally able editors, go on from month to month, without fear or doubt, and have nothing in fact to do but just write on, while they thankfully receive the laurels which the hosts of their delighted readers, apparently as a matter of course, entwine for their brows. Success to Putnam!

Harper's New Monthly.—Fires can not consume human enterprise, though its fruits may be buried in ashes fathoms deep. The Harpers illustrate this in an eminent manner. The April number of their magazine was promptly issued, and its contents are as good as ever. Success to these excellent and enterprising men!

List of Patents Issued,

FROM MAR. 7 TO APRIL 11.

Geo. B. Field, of St. Louis, Mo., for improvement in rotary cultivators.

Oliver Leslie, of Attica, Ind., for improved saw-set.

Orrin Newton and J. A. Crever, of Pittsburgh, Pa., for improvement in excluding dust from railroad cars.

Andrew Overend, of Philadelphia, Pa., for improvement in machine for damping printing paper.

Joseph W. Robinson, of Kirkland, N. Y., for improvement in form of scythes.

Edwin Milford Bard, of Philadelphia, Pa., for improvement in mould-boards of ploughs.

James Perry, of Roxbury, Mass., for improved method of constructing moulds for making printing-blocks.

Russell D. Bartlett, of Bangor, Me., for improvement in machines for making shovel-handles.

Frederick Espenschade, of Mifflintown, Pa., for movable tapering nozzles to the exhaust-pipes of locomotives.

Chas. W. Billings, of South Deerfield, Mass., for improvement in seed-planters.

Joshua Cross, of New-London, Ohio, for improvement in faucets for measuring liquids.

Edward S. Haskins, of Boston, Mass., for improvement in spring-clamps for clothes lines.

Elbridge G. Hastings, of Brooklyn, N. Y., for improvement in machines for dressing stone.

Albert Hock, of Paris, France, for process for gilding or plating fibrous substances. Patented in France, Dec. 15, 1851.

J. B. Larwill and J. Cross, of Bucyrus, Ohio, for improvement in faucets for measuring liquids.

Eldridge H. Penfield, of Middletown, Conn., for improvement in metallic grummets for sails.

Orson C. Phelps, of Boston, Mass., for improved stop-cock.

Ezra Ripley, of Troy, N. Y., for improvement in rotary engines.

Nathaniel Smith and Asa Crandall, of North Kingston, R. I., for improvement in machines for grinding cotton-cards.

Welcome Sprague, Ellicottsville, N. Y., for improvement in seed-planters.

Jas. H. Sweet, of Pittsburgh, Pa., for hanging of the griping-jaw of spiking machines, in weighted levers.

Philander Shaw, of Abington, Mass., for improvement in rotary cultivators.

Abijah Taylor, of Pekin, Ill., for improvement in steam engine faucet-valves.

Mansel Blake, of Sutton, N. H., assignor to himself, Jas. B. McAlestee, and Erastus Blake, of same place, for improved folding-blinds.

Westel S. Daniels, of Panama, N. Y., for improvement in obstetrical supporters.

Lewis Fagan, of Cincinnati, Ohio, for improvement in smut-machines.

Alpheus Kimball, of Fitchburg, Mass., for improvement in securing window-sashes.

Daniel S. Middlekauff, of Hagerstown, Md., for improvement in grain-harvesters.

Simon Pettes, of New-York, for improvement in machines for drilling stone.

Jonathan Burrage, of Roxbury, Mass., assignor to himself and Frederick W. Newton, of Newton, Mass., for improvement in processes for making varnishes.

J. G. Macfarlane, of Perry County, Pa., for improvement in seed-planters.

Victor Beaumont, of New-York, N. Y., for improved machine for distributing types.

Henry Green, of Ottawa, Ill., for improvement in grain-harvesters.

Ralph Bulkley, of New-York, N. Y., assignor to G. S. Cameron, of Charleston, S. C., for improvement in machines for rubbing type.

F. C. Goffin, of New-York, N. Y., assignor to Alfred B. Ely, of Boston, Mass., for improvements in safe-locks.

Obadiah Marland, of Boston, Mass., for improvement in iron safes.

R. P. Benton, of Rochester, N. Y., for improved machine for dressing spokes.

Jeremy W. Bliss, of Hartford, Conn., for improvement in lifting-jacks.

Chas. T. Appleton, of Roxbury, Mass., for improvement in processes for dyeing.

A. C. Carey and Jeremiah Smith, of Ipswich, Mass., for improved hydraulic engine.

Dexter H. Chamberlain, of Boston, Mass., for improvement in screw-wrenches.

Thos. Carpenter, of Manlius, N. Y., for improvement in concaves of clover-hullers.

Chas. H. Fonde and T. B. Lyons, of Mobile, Ala., for improvement in dredging-machines.

J. L. Garlington, of Snapping Shoals, Geo., for improvement in grain-threshers.

Chas. W. Hawks, of Boston, Mass., for improvement in nippers for printing-papers.

Philip H. Kells, of Hudson, N. Y., for improvement in harvesters.

Jordan L. Mott, of New-York, N. Y., for improvement in railroad car-wheels.

Ambrose Nicholson, of Poland, N. Y., for improvement in self-fastening shutter-hinges.

J. G. Shands, of St. Louis, Mo., for improvement in machines for dressing mill-stones.

C. V. Ament, of Dansville, N. Y., for improvement in devices for preserving hens' eggs in the nest.

David A. Morris, of Pittsburgh, Pa., for improvement in anti-friction boxes.

Charles T. Appleton, of Roxbury, Mass., for improvement in dyeing apparatus. Patented in England, Jan. 7, 1854.

D. A. Cameron, of Butler, Pa., for improvement in belt-saws.

Thos. Dougherty, of Erie, Pa., for improvement in shoe-lasts.

George W. Livermore, of Cambridgeport, Mass., for improved machinery for making barrels.

Samuel McKenna, of Cincinnati, Ohio, for improvement in portable metal-punches.

David and Herman Wolf, of Lebanon, Pa., for improvement in seed-planters.

Alex. Wilbur, of Lancaster, Pa., for improvement in machines for jointing staves.

Heman Gardiner, of New-York, N. Y., for improvement in quartz-crushers. Patented in England, July 5, 1853.

Jeremiah W. Brown, of Hartford, Conn., assignor to S. M. Folsom, of Charlestown, Mass., for rotary smoothing-iron.

Elijah Valentine and Abel Bradway, of Monson, Mass., for improvement in machines for jointing staves.

Elbridge Webber, of Gardiner, Me., for improvement in ship's blocks.

Ellsworth D. S. Goodyear, of Stapleton, N. Y., assignor to New-York Rubber Company, of New-York, for improvement in processes for treating India rubber.

Robert H. Harrison, of Washington, D. C., assignor to Robt. H. Harrison and Jno. S. Gallagher, Jr., of same place, for improvement in churns.

A. J. Cook, of Enon, Ohio, for improvement in the dischargirg-apparatus of harvesters.

H. G. Ellsworth, of Auburn, N. Y., for improvement in belt-clasps for machinery.

Benjamin G. Fitzhugh, of Frederick, Md., for improvement in harvesters of grain.

Luther B. Fisher, of Coldwater, Mich., for improvement in seed-planters.

Benaiah Fitts, of Worcester, Mass., for improvements in feed-water apparatus for steam-boilers.

Richard Jones, of the county of Burlington, N.J., for improvement in making zinc white.

Seymour Ketchum, of Lancaster, Ohio, for improvement in smut-machines.

Charles P. Bailey, of Zanesville, Ohio, for portable head-rest for chairs.

Anson Balding, of Olney, Ill., for improvement in submarine scoops.

Thos. W. Chatfield, of Utica, N. Y., for improvement in hot-air furnaces.

Joseph Marks, of Dunkirk, N. Y., assignor to Wm. Whiting, of Roxbury, Mass., for improvement in machinery for operating car-brakes. Patented in England, Nov. 23, 1852.

Joseph Marks, of Boston, Mass., and John Howarth, of Salem, Mass., assignors to Wm. Whiting, of Roxbury, Mass., for improvement in machinery for operating car-brakes.

John Absterdam and Wm. Merrell, of Boston, Mass., assignors to Jas. A. Woodbury, of Winchester, Mass., and Wm. B. Merrell, of Boston, Mass., for improved device for tonguing and grooving tapering boards.

Richard D. Mott, of Spring Garden, Pa., for improvement in stereotype-pans.

Nicholas G. Norcross, of Lowell, Mass., for improvement in feed-motion for sawing lumber.

David B. Rogers, of Pittsburgh, Pa., for improvement in machines for forming cultivators' teeth.

Wm. H. Seymour, of Brockport, N. Y., for improvement in harvesters.

Ephraim, Titus and Emerson Sizer, and Amos Halladay, of Westfield, Mass., for improvement in Sacket's braiding-machine.

Joseph Smart, of the Northern Liberties, Pa., for improvement in pumps.

Henry C. Smith, of Cleveland, Ohio, for improved construction of shingle-machines.

Thos. G. Stagg, of Jersey City, N. J., for machine for tenoning, &c., blind-slats.

Jonathan C. Trotter, of Newark, N. Y., for improvement in furnaces for zinc-white.

Geo. Trott, of Pittsburgh, Pa., for improved oil-cup for steam engines.

Wm. Webster, of Morrisania, N. Y., for improvement in machines for bending sheet-metal.

R. A. Wilder, of Schuylkill Haven, Pa., for improvement in railroad car-wheels.

Edward H. Ashcroft, of Boston, Mass., for improvement in track-cleaners for railroads.

Joseph Leeds, of Philadelphia, Pa., for improvements in cooking-stoves.

Henry Underhill, of Canandaigua, N. Y., for improved hand printing-press.

James Baxendale, of Fall River, Mass., assignor to himself, and James Ferguson, of Taunton, Mass., for improved method of operating the doctors of calico-printing cylinders.

Solomon Andrews, of Perth Amboy, N. J., for improvement in drop and die forging and punching machine. Patented in England, Oct. 7, 1852.

Bernard J. La Mothe, of New-York, N. Y., for improvement in railroad cars.

B. A. Lavender and Henry Lower, of Baltimore, Md., for improvement in treating cane-fiber for paper and other purposes.

Rodney Miller, of Middlefield, Ohio, for improvement in carriage-tops.

Oldin Nichols, of Lowell, Mass., for improvement in chain-cable stoppers.

Elijah Roberts, of Rochester, N. H., for improvement in gates for water-wheels.

David A. Wells, of Cambridge, Mass., for improved preparation of vegetable fibers.

Wm. H. Atkins, (assignor to Samuel J. Parker,) of Ithaca, N. Y., for improvement in cops for sewing-machines.

Lorenzo D. Goodwin, of Pennville, N. Y., for improvement in water-wheels.

Willis Humiston, of Troy, N. Y., for improved candle-mould apparatus.

E. R. Ball, of Kalamazoo, Mich., for improved bedstead-fastenings.

Solomon G. Booth, of New-York, N. Y., for improvement in machines for corrugating sheet-metal.

Benjamin Eakins, of Spring Garden, Pa., for improvement in valve-cocks.

A. K. Eaton, of New-York, N. Y., for improvement in amalgamating gold and silver.

Henry W. Farley, of East Boston, Mass., for improvement in railroad frog-guards.

Phanuel Flanders, of Lowell, Mass., for improvement in cranberry-winnowers.

William Gates, Jr., of Frankfort, N. Y., and H. J. Harwood, of Utica, N. Y., for improved machine for making friction-matches.

Charles Goodyear, of New-Haven, Conn., for improvement in treating vulcanizing-gums.

Carmi Hart, of Bridgeport, Conn., for improvement in machine for cutting veneers.

Stephen Hedges, of New-York, N. Y., for improved combined table and chair.

Morris Mattson, of Boston, Mass., for improvement in enema syringes.

L. O. P. Meyer, of Newtown, Conn., for improvement in treating caoutchouc and other vulcanizable gums.

Jno. Nesmith, of Lowell, Mass., for improvement in machines for making wire-netting.

Abiel Pease, of Enfield, Conn., for improved drill for metal-drilling.

Joseph Sollenberger, of Higginsport, Ohio, for improvement in training the vine.

Jacob Edson, of Boston, Mass., for improvement in pumps.

Jas. McCarty, of Reading, Pa., for improvement in heating skelps for the manufacture of wrought-iron tubes.

Wm. S. Loughborough, of Victor, N. Y., for improvement in bit-fastening for cast-iron bench-planes.

Geo. W. Livermore, of Cambridgeport, Mass., for improvement in crozing the ends of staves. Patented in England, Aug. 31, 1853.

T. W. Lafetra, of New-York, N. Y., for improvement in machine for drying tobacco.

John Ogden, of Philadelphia, Pa., assignor to Chas. S. Ogden, for improvement in making railroad chairs.

James MacGregor, Jr., of Troy, N. Y., for improved coffee-pot.

Elbridge Marshall, of Clinton, N. J., for improvement in seed-planters.

Wm. Ball, of Chicopee, for improvement in mills for grinding ores, &c.

Thos. Carter, of Laurens District, S. C., for improvement in seed-planters.

Stephen Colwell, of Philadelphia, Pa., for improvement in iron buildings.

Samuel J. Parker, of Ithaca, N. Y., for improvement in sewing-machines.

Hiram Stafford, of Mount Pulaski, Ill., for improvement in rat-traps.

Thos. E. Seay, of Columbia, Va., for improvement in brick-machines.

Wm. A. Shaw and Geo. Parker, of Boston, Mass., for improvement in street gas-lamps.

Henry Sigler, of Houston, for improvement in fish-hooks.

Chas. Leavitt, of Quincy, Ill., assignor to Sterling B. Cockrill, of Nashville, Tenn., for improvement in machines for cleaning cotton.

James Harrison, Jr., of Milwaukie, Wis., for improvement in sewing-machines.

Jose Toll, of Locust Grove, Ohio, for improvement in rat-traps.

George W. Thayer, of Springfield, Mass., for improvement in trusses for iron bridges.

Nathan Thompson, Jr., of Williamsburg, N. Y., for improvement in reversible life-boats.

John Webster, of New-York, N. Y., for improved lubricator.

Henry Allen, of Norwich, Conn., for improved boring and mortising machine.

Francis Arnold, of Haddam, Conn., for combination of foot-stoves and lanterns.

Stephen P. Brooks, of Boston, Mass., for improved iron-frame upright piano-forte.

Julio T. Buel, of Whitehall, N. Y., for improved attachment for fish-hooks and artificial baits.

Lewis S. Chichester, of Brooklyn, N. Y., for improvement in dressing flax and hemp.

Albert G. Corlis, of Portland, Me., for improved swell-mute attachment to piano-fortes.

John Elgar, of Baltimore, Md., for improvement in door-hinges.

Richard H. Emerson, of Chicago, Ill., for improvement in earth-cars.

Alex. Hall, of Lloydsville, Ohio, for improvement in piano-forte actions.

PERHAM OUTDONE!!

The proprietor of the *Mercantile Guide* would respectfully call the attention of MERCHANTS, FARMERS, and MECHANICS, residing out of the city, to the MODERATE TERMS FOR A YEARLY subscription to the *Guide*, being to mail subscribers only

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POSTMASTERS

and others are respectfully requested to act as AGENTS for this paper, to whom we will forward specimen copies, free, when desired to do so.

PREMIUMS.

As an inducement for persons to interest themselves to obtain subscribers for the *Mercantile Guide*, we offer the following Premiums, and upon the receipt of the names and *pay in advance*, we will forward them, per express, or otherwise, if ordered, to the address of those entitled to them.

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We would particularly appeal, knowing the efficiency of their services when energetically directed. By their co-operation our subscription list would soon out-number any paper published on this continent, and to gain this we shall at all times strive to embody in the columns of the *Guide*, something to not only please, but instruct our female patrons. Our subscription price being so low, there will be but little difficulty in their procuring for us enough subscribers to obtain any of the *Rich Premiums* above described, and what lady would not desire a handsome GOLD WATCH, LOCKET, BRACELET, PEN and PENCIL?

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Aubusson Carpets.—They elicit the warmest commendations of every beholder, excel in beauty and durability, are sold at moderate prices, and introduced in the market at this Establishment.

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Sales Room, No. 10.

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